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Titanium G4 Inside and Out

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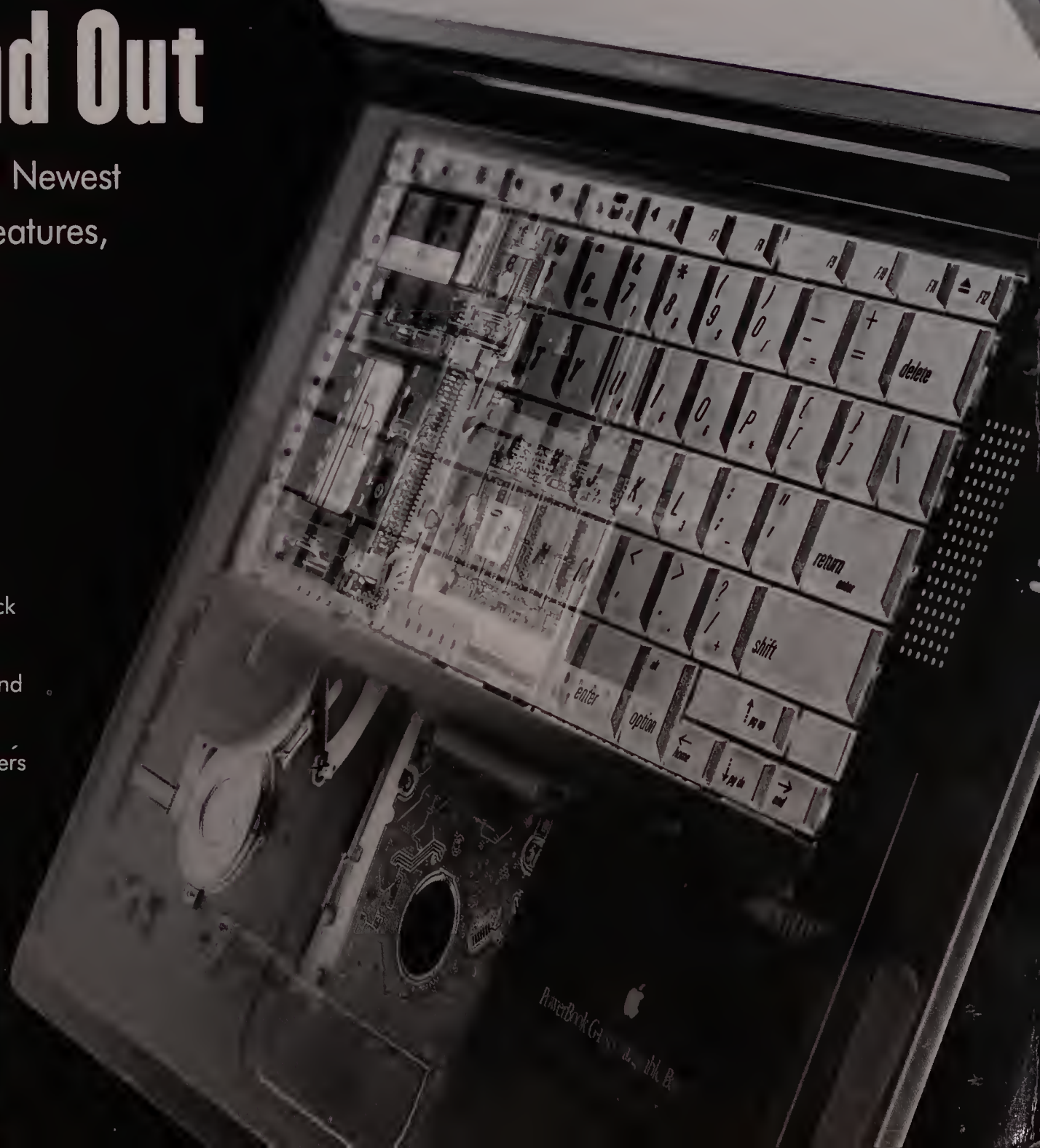

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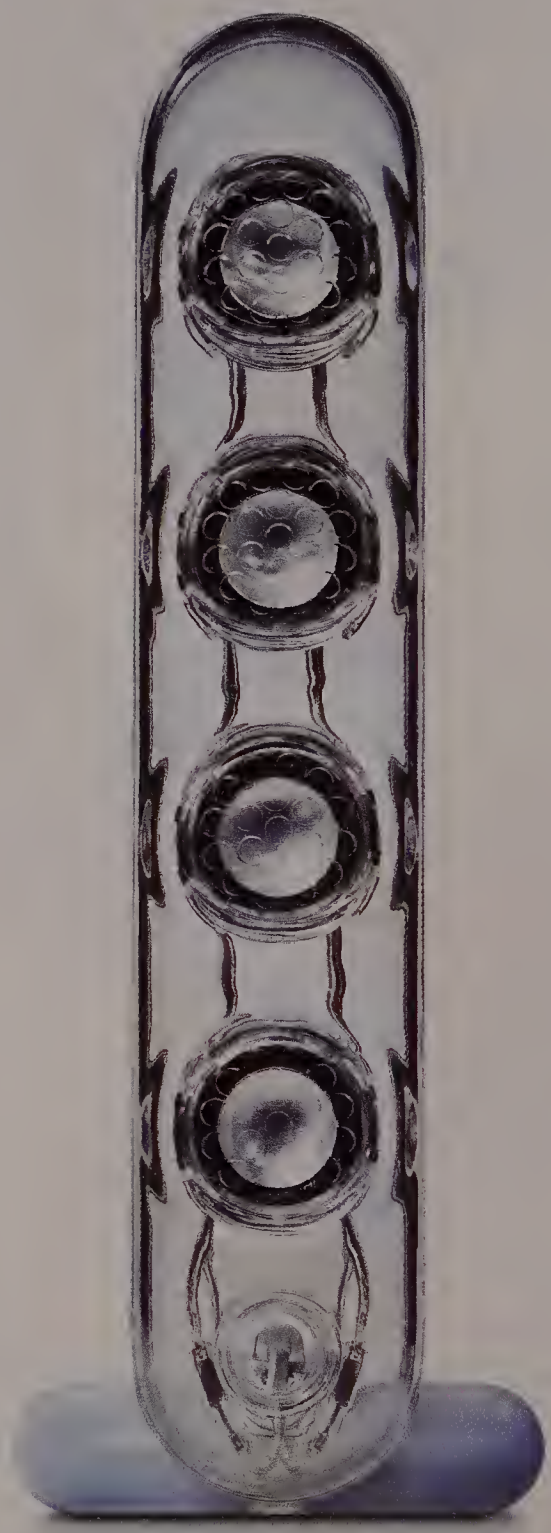

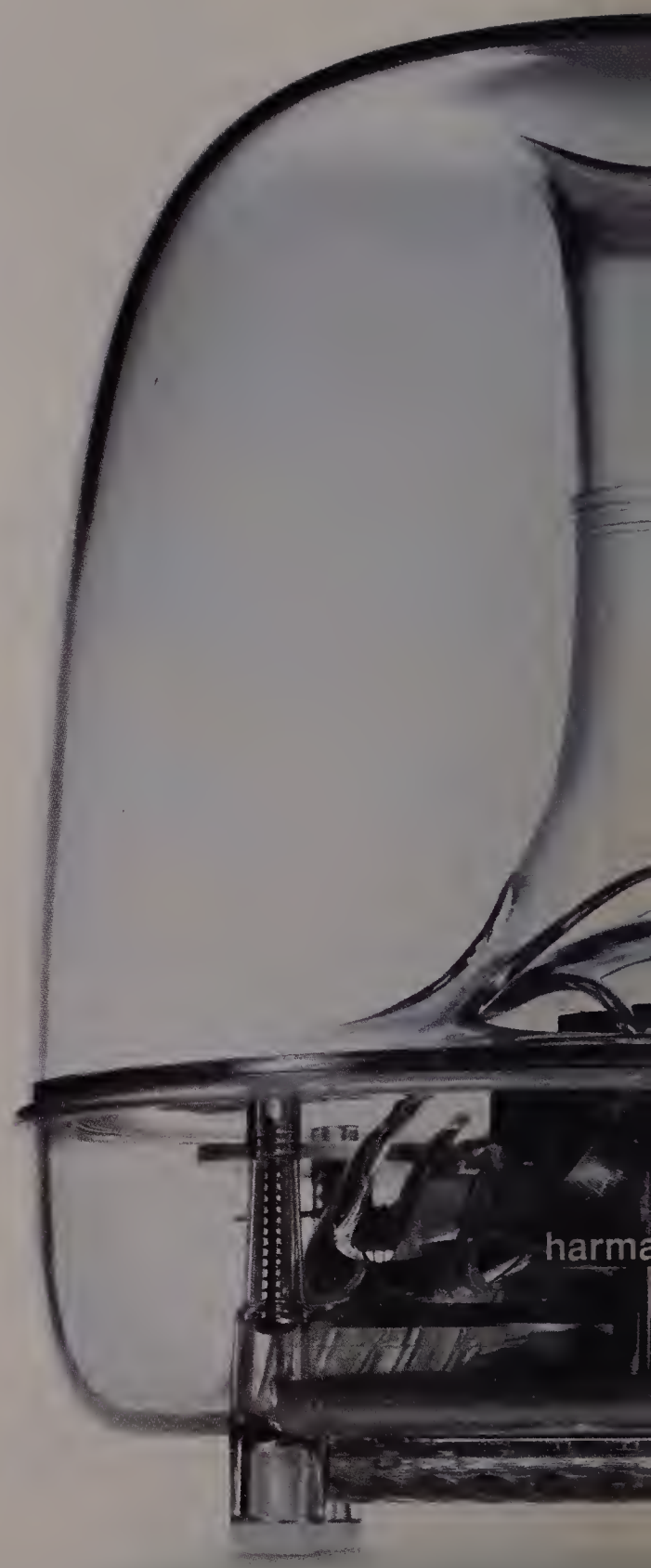

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Incorporating MacUser

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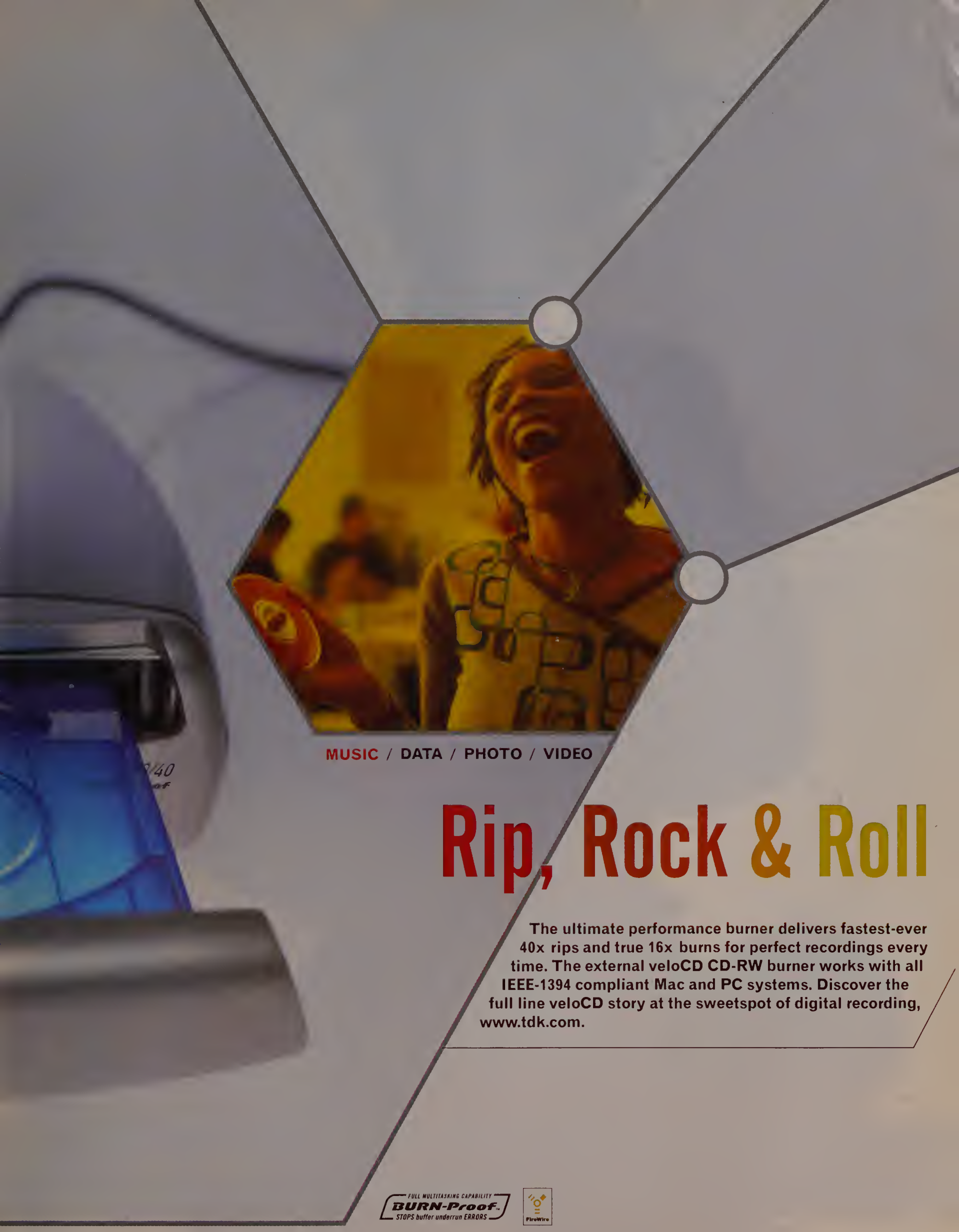
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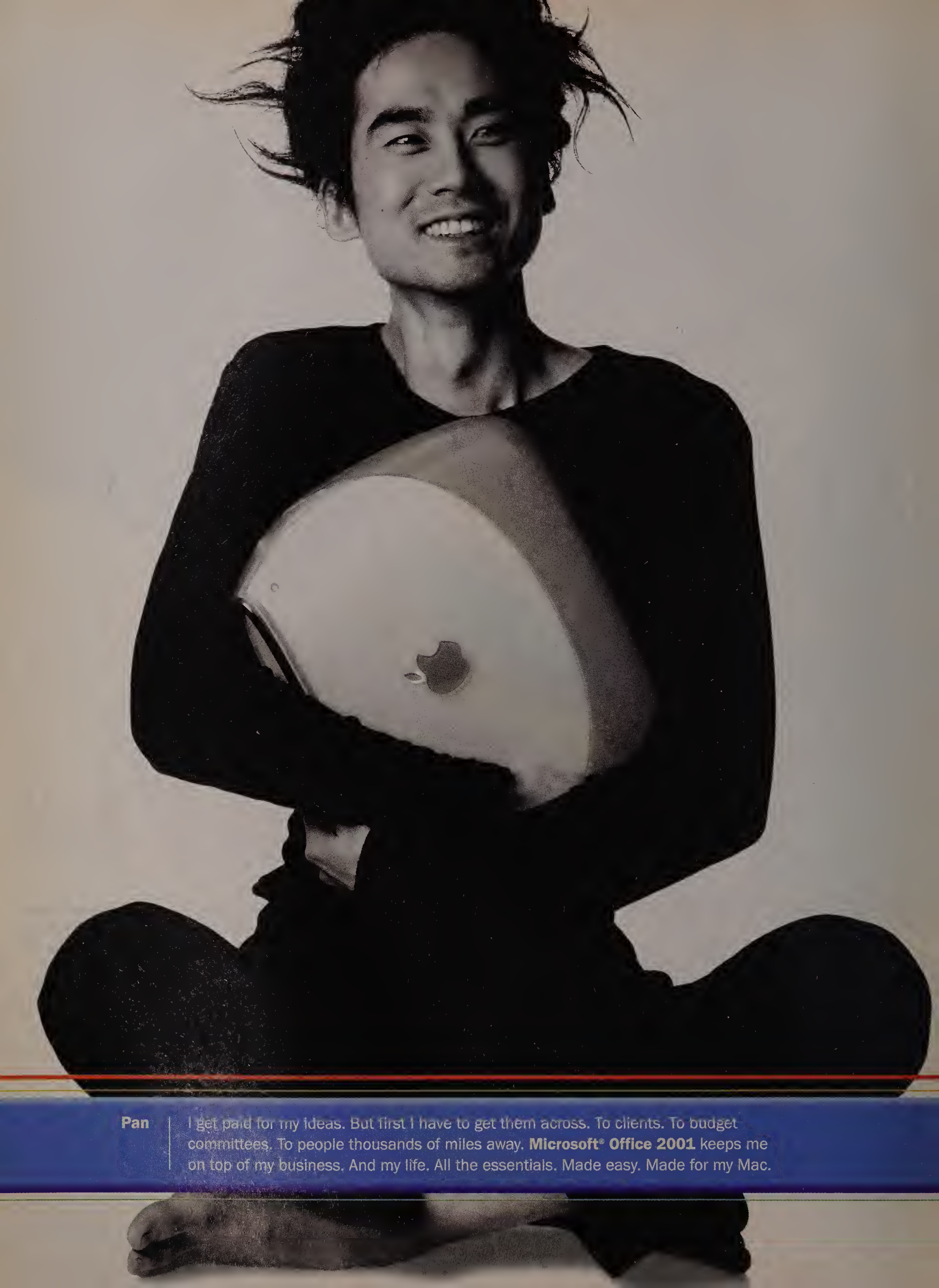

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ANDREW GORE

The Community of Mac

HOW OPINIONATED MAC USERS ARE MAKING MACWORLD BETTER

Mac users are described alternately as mindless zealots and as nitpicky whiners, often by the same critics. What these critics fail to recognize is that devotion and criticism are opposite sides of the same coin. When you care about something—*really* care about it—you want to make it better. And criticism, even if it's a bit shrill at times, is about the only way a user can make a difference.

One thing is for sure: Mac users are never at a loss for ideas on improving the Mac experience.

So when Macworld.com's new online forums opened for business in January, we decided to try something a little risky . . . foolhardy, some would say. Rather than making an educated guess about what our readers wanted from a *Macworld* article, we decided to make real live readers part of our story-development process. We invited them to tell us what features they wanted us to test and what topics they wanted us to cover. Honestly, I was a little worried that we might be setting ourselves up for a heap of trouble. After all, how could we possibly hope to satisfy thousands of Mac users' seemingly unquenchable thirst for detail?

But, throwing caution and common sense to the wind, we went ahead and did it anyway. To my delight and surprise, the resulting flood of input was astounding.

Town Squared

These new forums weren't our first foray into the community interaction business. Previously, we've used Web BBS, the same software still in use at MacCentral, which lets users attach comments to the bottom of stories. But because story forums aren't connected to one another, have a fairly wooden interface, and are populated by anonymous posters, they didn't offer a strong base for community development. It was a great soapbox for shouting matches, but not for constructive, ongoing conversations.

This first experience with Web-based discussion taught us some valuable lessons, especially that online communities are fragile things—hard to start and just as hard to maintain. You must have the right environment and the right ingredients. You need to build a discussion area that's designed to attract only the kinds of conversation you want to see. In this case, forum does follow function.

We ultimately settled on Infopop's Ultimate Bulletin Board (UBB) software, which offers a clean, easy-to-use interface and a rich set of features, from emoticons and support for embedded URLs to the ability to forward a forum string to a friend. And most important, UBB can require users to register (with a real e-mail address) before they contribute. By setting up that simple and slight barrier, we were able to create a place where Mac users could interact safely, with a drastically reduced fear of being attacked.

Once this foundation was set, we needed to get people to talk. But how could we break the ice?

continues

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It Takes an iVillage

Right around the time this was happening, Apple announced a replacement for the venerable PowerBook G3, the sleek new Titanium PowerBook G4.

Take *Macworld*'s shiny new forums and combine them with thousands of users practically frothing at the mouth for details on the new PowerBook, and you're one good topic away from an explosion.

Enter Apple. Thanks to tremendous backlogs and a slow start at the factory producing the new models, two weeks after the Titanium PowerBook G4 was announced, there were only five of the portables in California. And Macworld Lab had one of them. Inspired by Brett Larson, a *Macworld* editor who has been using Mac OS X since September and writing about it in a series of online diaries, I decided to write a series of PowerBook G4 diaries. My first stop: the Portable Macs and Handhelds area of the Macworld.com forums, where I announced that we'd received one of the rare PowerBooks and asked users what they wanted to know.

The resulting flood of input was constructive and helpful. Using the input of forum contributors, combined with my long PowerBook history, I generated a series of articles that were so in-depth and so laden with photographs that one wag at the Web log Plastic.com referred to it as "almost pornographic." When it came time to create the cover story of this very issue, I ended up generating perhaps the most thoroughly researched article I've ever participated in . . . and I've been reviewing PowerBooks since they were first introduced.

Perhaps more impressively, what started as an exchange between me and a handful of PowerBook fans quickly developed into a vast community of users exchanging everything from tips on where to get RAM cheap to discussions of bugs, design flaws, and which bag best accessorizes that shiny new portable. Literally thousands of people joined the Macworld.com forums in the next 30 days, and those diaries are some of the most-read stories we've ever run on the Web.

This is just one example of how the forums have ended up being a remarkable exchange of information. Our *Mac 911* columnist, Christopher Breen, leads an extremely active series of troubleshooting areas. And the aforementioned Mr. Larson presides over some feisty debates about Mac OS X.

Needless to say, you can expect us to be doing a lot more of these diaries on Macworld.com. Even more important than finding a compelling new form of Web content—the interactive Lab test—was finding a wonderful new way to engage the Mac community and to help make the stories we create for them more thorough, more complete, and more specific to what they want to know. Before, we'd get a chance to really hear from our readers at Macworld Expo and on a few other occasions throughout the year. Now we can talk to you every day. And that's going to allow us to do our job—providing the Mac community with good information—better than ever before. **m**

ANDREW GORE is *Macworld*'s editor in chief. To comment on this column, go to Macworld.com and type **Vision Thing** in the Search box. Visit our forums by clicking on the Forums button at the top of any Macworld.com page.

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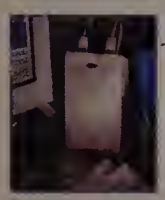

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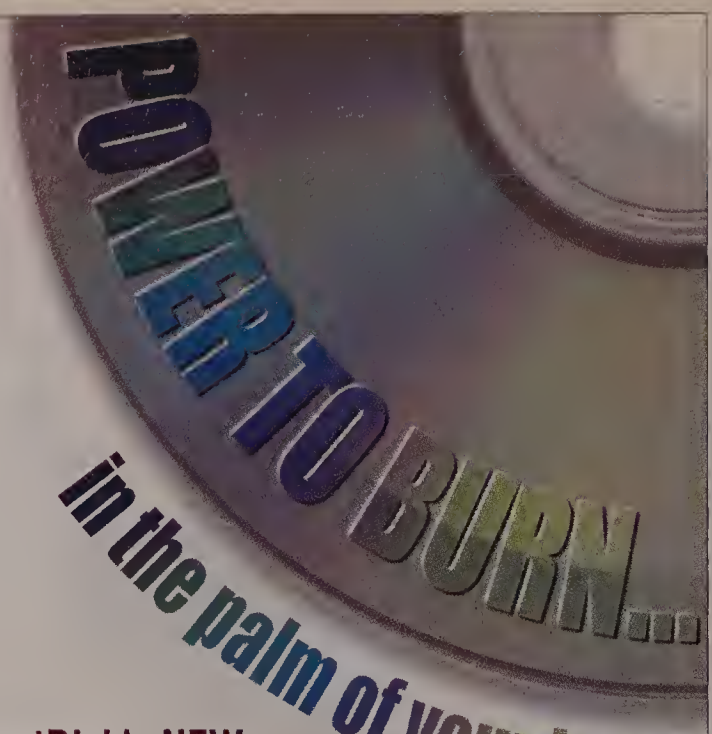

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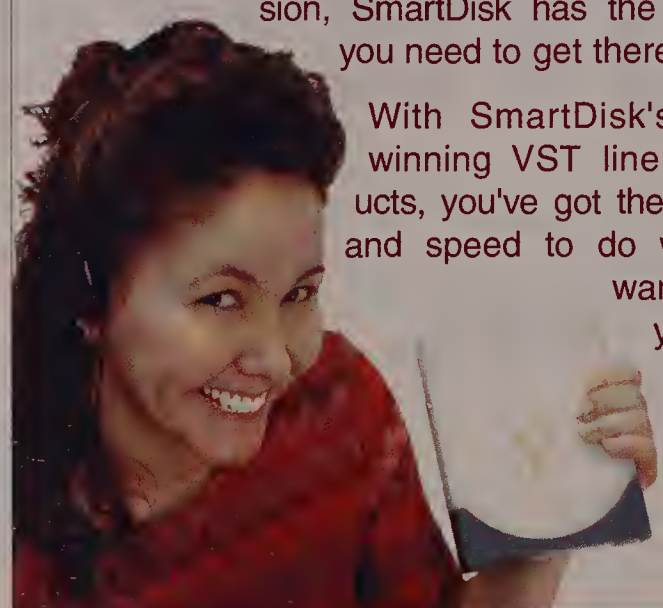

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BPA

Feedback

Your Mac, More Ways

As thorough as Christopher Breen was, he left out a crucial customizing application ("Your Mac, Your Way," February 2001). Even with all the enhancements Breen listed, my Mac still just sat there and stared blankly back at me. Well, not anymore!

With Kineticon 1.7.1 ($15; www.kineticcreations.com), my desktop has smiley faces winking at me, flickering candles, spinning Apple logos, nuclear explosions, and more. I even created my own animated icons with Kineticon.

Michael Wolff
New York, New York

Your article on customizing your Mac desktop didn't refer to two programs I often use. The first, a freeware application called ApplWindows 2.0.2 (available at www.versiontracker.com), allows you to use arrow keys to cycle through open applications and an application's windows.

The second, a shareware application called AliasMenu 2.2 ($25; www.widemann.net), helps you create pull-down menus in the system menu bar. These menus can be subdivided and organized, just like your Favorites menu in Microsoft Explorer. You can also assign custom icons to each menu, to save space on the bar. A programmable–hot-key feature allows you to open any item in any of the menus from the keyboard.

Michael Klarreich
Seattle, Washington

Bruce Tomlin's SoundMaster shareware, briefly mentioned in "Your Mac, Your Way," made the Mac come alive for users who like audio feedback. My Mac sounds like a typewriter when I type, complete with a carriage-return bell. It chimes the hour like Big Ben and gives me short audio reminders of every quarter hour.

But I am surprised that you did not seem to be aware that the last Mac OS that could run this gem was 7.5.2. When Tomlin declined to go on with SoundMaster, Ricardo Ettore came to the rescue with Sounds4Fun 1.0 ($14; www.users.dircon.co.uk/~r-ettore/Sounds4Fun.html), essentially an updated and improved version.

William D. Bandes
El Cajon, California

Spinning Out of Control

Why, in the PageSpinner 3.0 review (February 2001), does the screenshot's caption read "PageSpinner's approach to Web pages falls between WYSIWYG and plain-text editors," dismissing PageSpinner as "Quasi-Wizzy"? I've been using PageSpinner for nearly four years, and it is no more WYSIWYG than SimpleText is a graphics application. It is an HTML text editor that is both powerful and easy to use.

One could make a stronger argument that BBEdit is "Quasi-Wizzy" because of its Table Builder function. Perhaps the editors at *Macworld* should cross-reference their Mac application reviews with the user feedback from VersionTracker.com. There you will find nothing but stellar reviews of PageSpinner—from people who have actually used the program!

Mike Schindler
Mechanicsburg, Pennsylvania

continues

Third Time's a Charm

Paging through my February 2001 issue of *Macworld*, I couldn't help noticing that *Feedback* and *Mac 911* included nearly identical tips for creating simple AppleScripts that allow you to use function keys in place of the power key, which is missing from the Pro Keyboard. Clearly, a good idea bears repeating, but I believe I can top both of them.

After installing Speech Recognition on my G4, I modified the Restart This Computer applet provided in Speakable Items—I replaced **restart** with **shut down** and **sleep** as appropriate. I then named the commands "Restart," "Shut Down," and "Sleep," respectively. Now, when I'd otherwise be reaching for that power key, I simply say, "Computer, shut down."

Top that, Windows geeks.

Jeff Mark
Berkeley, California

The Desktop Critic: nEUtered in an Austrian Bar?

David Pogue must have spent some time in a dark bar in Salzburg if he agreed to buy a digital video camera for $4,000 ("Unexpected Lesson in Europe," *The Desktop Critic*, February 2001). One can buy a Sony DCR-TRV900 in Europe for $2,200 or less (I have a DCR-TRV900 that I am very proud of). This camera has FireWire in and out. And now you can find many more cameras with FireWire capabilities for less than $2,000. Austria is more expensive than some places, but not *that* much more expensive. $4,000 is far too much to pay for such a camera, even there. A little less wine and a clearer head might be better for Pogue when he visits Europe in the future.

Paul Moortgat
Antwerp, Belgium

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CORRECTIONS

The photographs of the iBook Special Edition and the AirPort Base Station in "The 16th Annual Editors' Choice Awards" (March 2001) were created by Stan Musilek.

The large-format printer we reviewed online in March 2001 (Macworld.com) was the Hewlett-Packard DesignJet 500.

Apple's iDVD can write only an hour of video to a DVD disc due to the single-layer DVD disc and the limitations of the SuperDrive mechanism. We misreported the reason in "Disc Warrior, Come Out to Play" (Buzz Extra, March 2001).

Visual effects used in Macworld's February 2001 cover images were created by Dan Doerner.

The photograph that appeared in "Test Cases" (The Vision Thing, April 2001) was created by Stephen Sugg. m

The Feedbag

Reader Gary P. is angry with us. "Your editors need to get out from behind their monitors and out in the world a bit more," he says. And we would, Gary, but there's just too much anger out there in the world these days.

For example, some readers are directing their anger toward Cupertino. "I want to thank Steve and the moronic marketing people at Apple for turning me into the grumpiest former PC user on the planet," says a reader from Bosnia, a country that's no stranger to anger. "Look, I knew that a G4 PowerBook was in the not-too-distant future. However, to offer rebates to boost lagging G3 sales, only to drop the price and introduce a new G4 model within a few weeks, is downright stupid."

That's true. The smart thing would have been for Apple to unveil a "buy a PowerBook G4, get a PowerBook G3 *absolutely* free!" promotion. But that probably would have made the company's investors a bit, well, angry.

Still others of you are angry that we didn't start sticking beautiful people on our covers sooner. Reader Stacy asks, "Who is that gorgeous Asian guy on the cover of your February issue?" Fellow reader Kyle wants to know what that model was wearing: "DKNY . . . Kenneth Cole . . . Armani? Please tell us what threads that cat was sporting 'cuz my man was stylin' 'n' profiling hard-core."

Would you believe that he was a proud member of *Macworld*'s editorial staff? That's right, Gary—we may be stuck here in an office, but at least we're applauded as the gorgeous, stylin' fashion plates that we are!

If only that were the case.

Actually, the model's name is Archie, and he came to us from the CED talent agency. But we have no idea what he was wearing—we don't get out much.

And that makes *us* angry.

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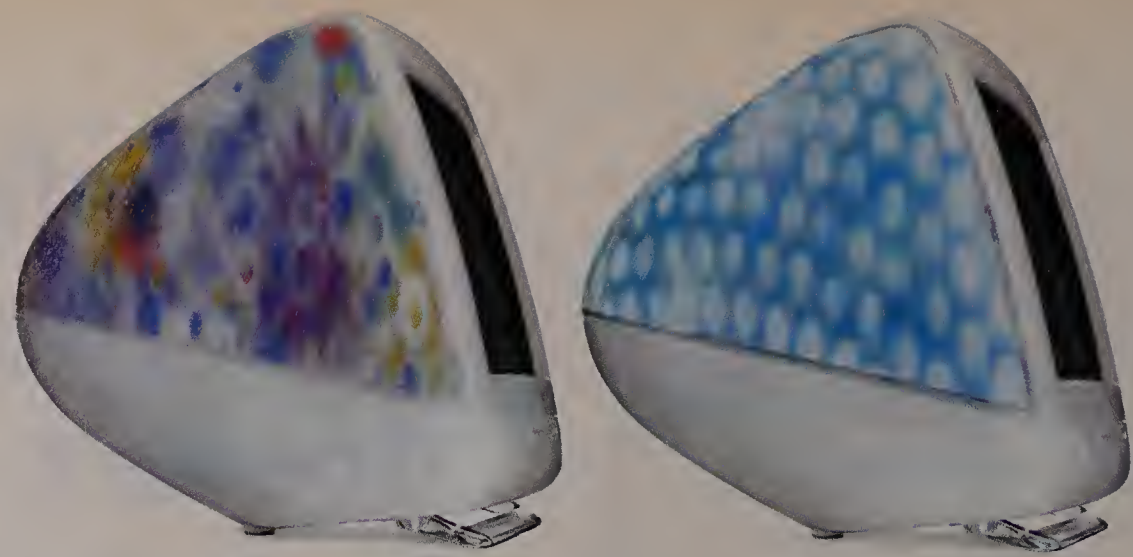


MAC MAKEOVERS

Just Another Pretty Face?

Few would dispute that the iMac single-handedly saved Apple's bacon in the late nineties. But as the all-in-one desktop nears its third birthday amid an industrywide slump in PC sales, is the iMac headed for its last hurrah? After all, you can change a computer's color only so many times and expect to turn heads.

But the company sees The Computer That Steve Jobs Built becoming the hub for digital devices such as MP3 players, DV cameras, and CD players. The latest tweaks to the iMac reflect that strategy.

Apple raised the price of its basic iMac but added two FireWire ports. Since every new iMac now can edit digital videos, the confusing DV distinction is gone. The 500MHz and 600MHz models ditch the DVD drive in favor of a CD-RW drive—all the better for burning CDs with iTunes 1.1.

Buyers who want to upgrade to OS X may be disappointed that only the iMac SE has 128MB of installed memory—the amount of RAM recommended for running the new operating system. Many users have been able to run the OS X beta with only 64MB of RAM, but to run the finished operating system, the 400MHz and 500MHz iMacs may still need a memory upgrade.

More Info:
www.macworld.com/subject/imac
www.macworld.com/subject/desktops

Head to Macworld.com for the latest news and reviews of Cubes and iMacs.

LINKS

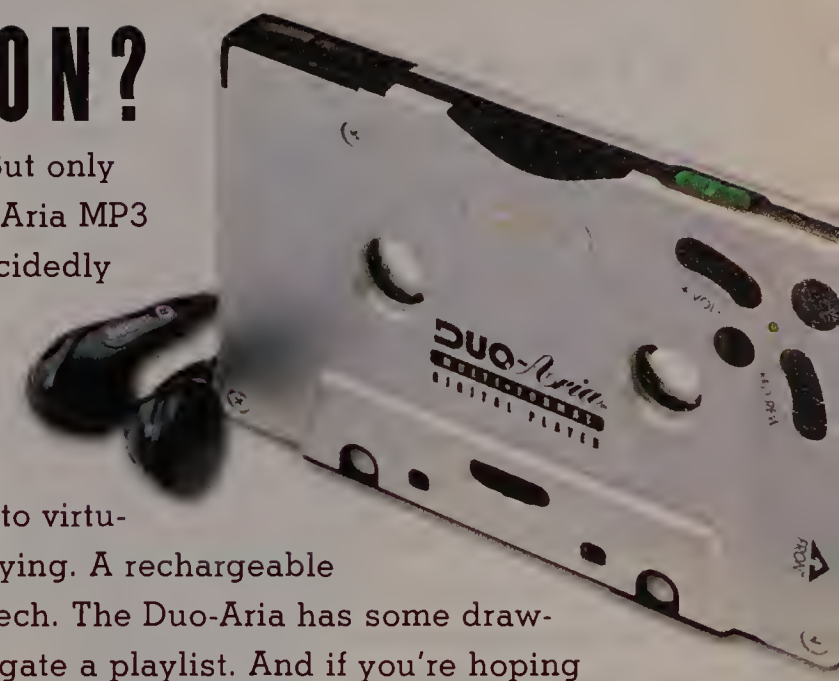
The Cube Cubed

When Apple rolled out the Power Mac G4 Cube last summer, people marveled at its compact size. They drooled over its sleek design. They praised its top-loading slot DVD drive and crisp digital sound. And then they didn't buy it. G4 Cube sales were well short of Apple's expectations. What's a company to do but slash prices, create three configurations, and try again? Think of the new Cubes as Apple's attempt to turn admiration of the Cube into actual sales of the Cube.

—PHILIP MICHAELS

	PROCESSOR SPEED	BUILT-IN RAM	STORAGE	OPTICAL DRIVE	COLOR/ *GRAPHICS CHIP	PRICE
NEW iMACS	400MHz	64MB	10GB	CD-ROM	indigo	$ 899
	500MHz	64MB	20GB	CD-RW	Flower Power, Blue Dalmatian, indigo	$1,199
	600MHz (Special Edition)	128MB	40GB	CD-RW	Flower Power, Blue Dolmatian, grophite	$1,499
NEW G4 CUBES	450MHz	64MB	20GB	DVD-ROM	*ATI Rage 128 Pro	$1,299
	450MHz	128MB	20GB	CD-RW	*ATI Rage 128 Pro	$1,599
	500MHz	256MB	60GB	CD-RW	*Nvidia GeForce2MX	$2,199

WHAT? NO VINYL VERSION?



MP3 players have gotten flashier, sleeker, and more futuristic. But only one can claim the distinction of being retro-chic. The $250 Duo-Aria MP3 player by Digisette (973/455-7084, www.digisette.com) looks decidedly nondigital, camouflaged as the audio standard of yesteryear: a tape cassette. But this incognito USB device is, in fact, a full-fledged MP3 player with 32MB of on-board flash memory (expandable to 96MB with a 64MB SanDisk MultiMediaCard). It works as a stand-alone player, or you can insert the Duo-Aria into virtually any tape deck—your car stereo, say—to keep the music playing. A rechargeable NiMH battery allows for six hours of music or nine hours of speech. The Duo-Aria has some drawbacks—for example, no LCD screen, making it awkward to navigate a playlist. And if you're hoping for the triumphant return of another old audio standard, we're sorry to disappoint you: an eight-track cartridge version is not in the Digisette pipeline.—ANTON LINECKER

QuickTime Conservation

Welcome to Race Rocks, Garry Fletcher says. Use the Web to visit the windswept islands off the coast of British Columbia, Canada. Watch and listen.

Then stay away.

It took Fletcher 20 years to persuade the Canadian government to protect Race Rocks, a group of small islands that jut from the north shore of the Strait of Juan de Fuca. The islands, Canada's southernmost point, teem with sea lions, seabirds, and anemones.

Fletcher, a biology instructor at Lester B. Pearson College in Victoria, British Columbia, established racerocks.com last year. His idea: if he brought Race Rocks to the masses via streaming media, maybe the masses wouldn't come by, spooking seals and seagulls and banging boat anchors on the reefs.

Garry Fletcher works with his iBook.

Three cameras film live, continuous shots in QuickTime of lolling sea lions, dive-bombing pigeon guillemots, and spectacular sunsets. Web visitors can even control Camera One to make it zoom in on sights.

Feeds from each of the stationary cameras go to an iMac running Sorenson Broadcaster software. One Power Mac G4 streams archived video, and another is used to edit footage in iMovie and Sorenson. Meanwhile, Camera One's remote features run on a Mac 7300.

Racerocks.com has a mobile Webcasting unit: a Sony digital video camera connected via FireWire to a PowerBook G3 equipped with an AirPort card. Footage can be shot anywhere in the islands and surrounding waters, transmitted to an AirPort Base Station on the biggest island, and boosted with an external antenna.

Fletcher and his students even wired the island for sound by sticking a standard Mac desktop microphone out of a window. "We've put it in a plastic bag," Fletcher says. "It's amazing how it picks up the seal sounds and the gull sounds."

Fletcher's students use this mobile filming system during the summer months to create live Webcasts of tide pools and other ecosystems. And divers have used the same camera—connected by cable to a support boat—to capture images of sea lions cavorting in the deep.

A thousand visitors go to racerocks.com each week for the sights and sounds. But they're lucky Fletcher's setup doesn't deliver one of the sensations of Race Rocks: the smell. "It can be fairly ripe at times, especially when the sea lions pile up next to the docks," says Fletcher.—DAVID FERRIS

More Info: www.racerocks.com

Visit Race Rocks to see for yourself how Garry Fletcher is using the Mac to bring live images to your desktop.

LINK

WEIRD STUFF

Where's the Rest of Me?

If you don't mind looking like the geekiest kid on the block (and for people who cart around a PDA with a boatload of accessories, that probably isn't a top concern), the Half Keyboard, from Matias (905/265-8844, www.halfkeyboard.com), may be for you. Most Palm and Visor users have to master the art of Graffiti if they want to enter data quickly. But the $99 Half Keyboard is your ticket back to something approaching familiar text entry. Plug what looks like a sawed-off laptop keyboard into your PDA, and let half the traditional number of fingers do the walking. Learning to use the Half Keyboard is surprisingly easy if you can touch-type. The sound of one hand typing just got a lot zippier.—GREG KNAUSS

FROM THE LAB

dieBook

The iBook isn't just cute; it's also tough—or so Apple claims. Made with bulletproof plastics, the laptop should be able to withstand most hazards, certainly any pitfall an average user might encounter in the real world. But just how durable is an iBook in the hands of highly trained Macworld Lab technicians, fueled with an appetite for destruction, who needn't worry about voiding the warranty? Well, you wouldn't want to try these stunts at home, so we've saved you the trouble. Here's what you might expect from your loyal laptop if . . .

✔ **YOU FREEZE YOUR iBOOK**
The two coolest ploces we could think of were the local ice rink and the *Macworld* kitchen freezer. No problem: the iBook woke right up after 30 minutes in the cooler.

✔ **A LUNATIC ON A SCOOTER RUNS OVER YOUR iBOOK**
It'll get scuffed up, but it should still boot like o chomp.

✔ **YOU STAND ON YOUR iBOOK**
Surprisingly, nothing happened when we tried it. Our laptop creoked o little, but no ports broke.

✔ **YOU SIT ON YOUR OPEN iBOOK**
Smoshing down your iBook's keys will moke it crosh. But ours monoged to reboot—after we stood up.

✔ **YOUR iBOOK GETS HIT BY A FOUL BALL**
Despite some wicked fostbolls thot domoged our iBook's cose, the unhurt screen woke up with no problem.

✔ **YOU THROW YOUR iBOOK LIKE A FRISBEE**
The screen will breok. The mochine will still work, but it'll hove o desktop picture thot never goes owoy.

✘ **YOU SPILL A VENTI NONFAT MOCHA ON YOUR iBOOK**
It'll die. But if you dry it out overnight, your iBook moy reboot the next day.

✘ **YOU TAKE A BLOWTORCH TO YOUR iBOOK**
Sophisticoted circuitry and plostic do not respond well to open flome.

Lesson leorned? You con build a strong loptop, but you con't beat Storbucks. Or fire.—JAMES GALBRAITH

STAN MUSILEK (BOTTOM), DAVID PAPAS (TOP)

● CHECK YOUR CALENDAR

Steve Jobs usually gives a keynote address at each of the four big Mac trade shows each year, using the spotlight to introduce new products. It's also not unheard of for Apple to roll out products at the two Seybold seminars that target the creative-professional market. So if you're thinking about buying a Mac right before a big trade show, you might want to put off your purchase until you see what Jobs has up his sleeve.

● KNOW YOUR HISTORY

There's no hard-and-fast rule on how long it takes Apple to update its hardware—sometimes six months, sometimes longer. But by looking up the last time a product line was upgraded, you can get a pretty good idea of which Mac designs are fresh and which ones may be due for an overhaul.

● CHECK THE PRICE

Rebates aren't always a sign that newer products are on the way; sometimes retailers slash prices just to spur sales. But rebates can indicate that a company wants to clear out inventory to make way for new models. Take the PowerBook G3: Apple knocked $200 off the price in late 2000. In January 2001, it introduced the PowerBook G4. If you want a bargain, take the rebate when it's offered. If you want the latest Mac, the rebates offered at the Apple Store (http://store.apple.com) may be a sign that you should wait.

● FOLLOW THE NEWS

Apple never comments on upcoming product releases. But it has been known to drop the occasional hint. In December, Jobs told tech analysts that Apple missed the boat on CD-RW drives. Within a month, Apple introduced a new line of G4s with built-in CD-RW drives. Now Jobs says that Mac OS X will be preloaded onto every new Mac in July. Could that mean another round of hardware upgrades to spur sales? Stay tuned.

TIM BOWER

Afraid that your new Mac might promptly be old news? You're not alone.

REPLACING YOUR MAC

TO BUY OR NOT TO BUY

When Jonny Edbrooke bought his first Mac—a Centris 650—Apple launched the Quadra models a few weeks later. So when Edbrooke, the creative director of a Vietnam-based ad agency, bought two 500MHz Power Mac G4s last December for his company, he could guess what was coming. Sure enough, a month later Apple unveiled its new G4 line with built-in CD-RW drives and processor speeds topping 733MHz.

Since the latest G4s can run complex programs such as Adobe Photoshop faster, Edbrooke figures that "my machines, although new, are old, so that in a year's time my creatives will be talking about upgrades to handle what they want to do. A $4,000 computer you upgrade after one year is not a good investment."

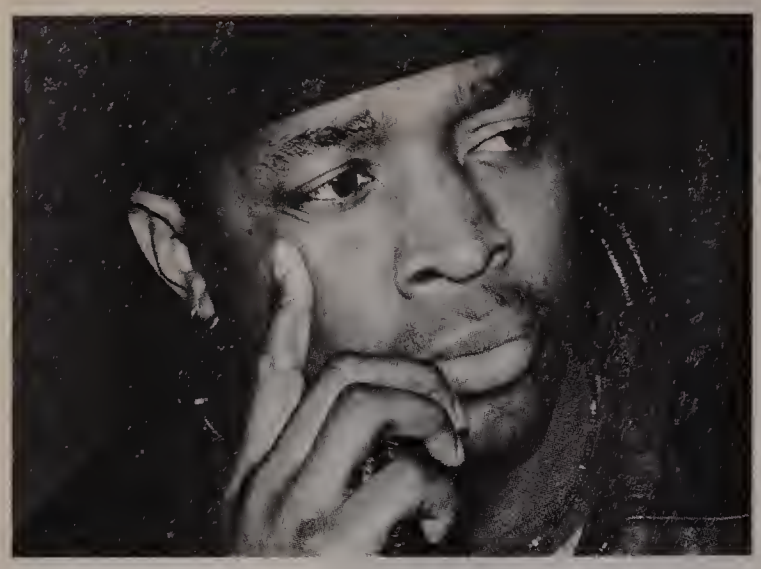
Anyone who's ever bought a computer has been haunted by the same worry: How do I know that a more powerful machine won't make my purchase obsolete before I even take it out of the box? There's no way to guarantee that the Mac you buy won't soon be surpassed by something better—Apple always seems to be upgrading its hardware. But with a little research, you can reduce the odds.—PHILIP MICHAELS

Latest Product Upgrades

PRODUCT	LAST UPGRADED	MAJOR CHANGES
Power Mac G4 Cube	February 2001	Lower price; CD-RW drives.
iMac	February 2001	New colors, CPUs; CD-RW drives.
PowerBook	January 2001	G4 processor; new design.
Power Mac G4	January 2001	Faster CPUs; CD-RW drives.
iBook	September 2000	Faster CPUs; more hard-drive space; FireWire port.

Trade Shows

MAC TRADE SHOW	DATE
Macworld Expo San Francisco	January
Macworld Expo Tokyo	February
Seybold Seminars Boston	early spring
Macworld Expo New York	July
Seybold Seminars San Francisco	late summer
Apple Expo Paris	September



As a member of Public Enemy, Chuck D has produced such landmark albums as Fear of a Black Planet *and* It Takes a Nation of Millions to Hold Us Back. *These days, though, the rap artist has turned his attention from making music to making it available on the Web. Chuck D's wired activities include an online record label, SlamJamz; an Internet radio station, bringthenoise.com; and Rapstation.com, an MP3, streaming-video, and hip-hop news site. And he uses Macs to stay on top of it all.*—DAVID FERRIS

THE DIGITAL WORLD

Making Photoshop Element-ary

An estimated 22 million digital cameras will be in use by the end of the year. By 2005, that figure could grow to 81 million. No wonder Adobe (800/833-6687, www.adobe.com) wants to take advantage of the exploding consumer demand for digital imaging products with Photoshop Elements. "The digital-camera customer was thought of throughout the development process of this product," says Mark Dahm, Adobe product manager.

The $99 Photoshop Elements replaces the similarly priced Photoshop LE. It offers many of the features found in the $609 Photoshop, including the History palette, layers, and an optimization window for saving Web graphics. But the new program also has a user-friendly interface—think Microsoft Office—that includes a Hints palette with tips for different tools. A Recipes feature offers step-by-step instructions for specific tasks such as color-correcting photographs.—KELLY LUNSFORD

PRO FILE

Rapped Up with the Mac

Q&A with CHUCK D

Q: ***How did you get into using Macs?***

A: Everything I learned about graphics I learned at Adelphi University in New York. I graduated in 1984. And everything I learned in college was obsolete by 1990. I had to relearn everything on the Mac, through Adobe Photoshop and Illustrator. When the G3 came out, I jumped on it like a rabid dog. I want a DVD player, but I'd have to get a new laptop, and I don't want to because the G3 is like a piece of my hip. Mainly I use it to create album covers for the artists I represent. I'm always traveling between my studios in Long Island [New York], Atlanta, and Anaheim Hills [California], so I can do everything on the plane. I've gotten fast. I can do covers—in the past it might have taken me three days. Now I'm down to 15 minutes. Macs are the clearest example of how to project music and art. Running [SlamJamz] off a laptop is a beautiful thing.

Q: ***What are you trying to accomplish with Internet radio at bringthenoise.com?***

A: We have ten shows. I do two radio shows, *When the S*** Hits the Fans* and *Beats, Rhymes and Life*. The beauty of Internet radio is that we can do one hour of programming a day. We don't need to program 24 hours. If the show starts at 9 p.m., and you're on the road at 8:45, you don't need to bust your ass to get home. You can listen to it whenever you want.

Q: ***The big challenge facing everyone is how to make the Internet pay. Have you learned anything about making money online?***

A: It's very important to realize you can't be everything to everybody in the digital space. If you don't recognize what we do and what we don't do, we are never going to succeed. You have to look at the audience as being a potential partner. We don't want people to come to the site and consume something. We've got to get them to come in and participate.

More Info:
www.macworld.com/2001/05/buzz/chuckd.html

Chuck D talks about his plans for his SlamJamz record label and his first experiences with computers at Macworld.com.

LINK

Q: ***So have you started making money yet?***

A: Rapstation is moving into the realm of making profits throughout, mainly based on ad base. We have yet to get funding from anywhere. If we got $8 million, we could last five years and get into the black. At SlamJamz, if we can turn four or five of our masters around, into TV, advertising, video games, then I think we can be profitable.

ANGELO CHESTER

What's HOT

A QUICK LOOK AT THE WORLD OF TECH

1. Apple wows Mac users with its new Titanium PowerBook G4. *The company settles on Titanium after the Helium PowerBook G4 kept floating away.*
2. The George Foreman Grill now sports iMac-like colors. *Guess that squashes those rumors about Apple's new iGrill project.*
3. Several new books shed light on the Microsoft antitrust trial. *We like Sue Grafton's best:* S Is for Sherman Antitrust Act Violation.
4. OS X hits the shelves. *There's nothing quite like that new OS smell.*
5. Apple's "1984" commercial gets voted second-best Super Bowl ad ever. *If you thought the epic Ridley Scott Mac ad was cool, wait until you see the upcoming commercial featuring Jeff Goldblum, a kazoo, and a tin can.*

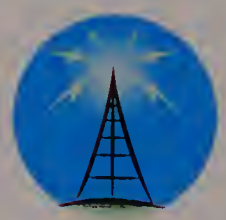
Product WATCH

UPDATED

- **iTunes** by Apple (800/692-7753, www.apple.com): Version 1.1 of the free CD-burning software adds support for more than two dozen third-party external CD-RW drives (listed at www.apple.com/itunes/compatibility).
- An Internet security utility from Intego (305/868-7920, www.intego.com): **NetBarrier 2.0** features updated firewall settings, personal information filters, and controls for unwanted Internet banner ads, cookies, and spam. It sells for $60; upgrades cost $30.
- Two products from Adobe (800/833-6687, www.adobe.com): **After Effects 5.0** has new 3-D tools, a parenting tool to define relationships between objects, improved masking, and new plug-ins. The standard edition sells for $649 and upgrades are $199. **Acrobat 5.0** adds tools that let you create live electronic PDF forms on the Web, save PDF files in Rich Text Format, and add comments and digitally sign PDF documents within a Web browser. The electronic document software has enhanced password protection and security controls. Acrobat sells for $249; you can upgrade for $99.

RELEASED

- A multifunction printer from Hewlett-Packard (800/552-8500, www.hp.com): The **HP PSC 750** ($299) combines a printer, copier, and scanner in a 19-pound USB device. The printer features a color graphics resolution of 2,400 by 1,200 dpi, while the scanner's resolution is 600 by 1,200 dpi.
- An Internet phone-call manager from InfoInterActive (902/832-1014, www.infointeractive.com): **ICM2000** monitors and manages incoming phone calls while Mac users are connected to the Internet. Available by subscription for $5.95 per month.



ANNOUNCED

- The hiring of Newer Technologies engineers by Sonnet Technologies (949/587-3500, www.sonnettech.com): The maker of upgrade cards says it has hired "all key engineering personnel" from Newer, which filed for bankruptcy in January. The move doubles Sonnet's engineering and development team.
- The purchase of router maker Netopia by Proxim (800/229-1630, www.proxim.com): The wireless-networking hardware maker will pay $223 million for Netopia, whose Mac products include **Timbuktu** remote-control software and the **netOctopus** network management program.

—Compiled by PHILIP MICHAELS

FREE FOR ALL?

A Word from Our Sponsor

There's no such thing as a free lunch, but how about free software? If two developers have their way, you're about to see a lot more of it for the Mac. But you'll see a lot more advertising on your desktop, too.

Conducent (703/326-9840, www.conducent.com), which created a method of desktop ad distribution back in 1996, has seen its technology embedded in about 500 Windows-based products. Conducent now has a partnership with Aladdin Systems (831/761-6200, www.aladdinsys.com) to make a product that lets Mac developers do the same thing.

But if the thought of commercial jingles scrolling across the Mac makes you want to ditch your G4, you needn't get too worked up: ad-supported software will exist only as an alternative to for-pay versions, the companies say.

Qualcomm has offered an ad-supported version of its Eudora e-mail software for more than a year. Close to a third of Eudora's 1.5 million users see what Bill Ganon, vice president of sales and marketing for Eudora, calls "sponsor mode," which features a 1.5-inch ad box that disappears when you call up another application. About 90 percent of the users who download Eudora in sponsor mode keep it that way, Ganon says.

Given the expense of buying a computer and the necessary peripherals, it makes sense to save money on software if you can. And if this trend continues, who knows? Maybe someday there *will* be a free lunch.—ANDREA DUDROW

INSIDE THE TITANIUM

by ANDREW GORE

Macworld
LAB TEST

MACWORLD LAB PUTS THE NEWEST, SLEEKEST POWERBOOK TO THE TEST

To determine whether you are a PowerBook fanatic, take the Gore test: If a genie were to grant you three wishes, what would they be?

If your first wish would be for a no-compromise Mac portable big on features, small on size and weight, and with enough style to make even PC enthusiasts jealous, you are a PowerBook fanatic. (It's OK if your other wishes would be for world peace and the like.)

Now rejoice, because that wish has just been granted.

Out-of-Box Experience

There's no denying the appeal of this new portable Mac. When I brought the Titanium PowerBook G4 home for the first time, my family opened its box and passed it around as if it were a holy relic.

When I finally wrestled the new PowerBook away from them, the first thing I noticed was how light it was. Apple has shaved almost a pound off the previous PowerBook model (from 6.1 to 5.3 pounds)—and the increased rigidity of the titanium shell allows you to safely lift this PowerBook with one hand.

Opening up the PowerBook G4 is slightly tricky: just below the center of the lid, there's a long silver button, which you depress to release the magnetic catch. Once the lid is open, you're greeted by a great gray expanse and what looks like a

G4 POWERBOOK

tiny keyboard. But that's an optical illusion: this PowerBook is wider than the previous model (13.4 inches versus 12.7 inches). And it's not as deep (9.5 inches versus 10.4 inches), so it should be easier to use on a plane. The keyboard is the same as the PowerBook G3's, with a notable exception: it's not spongy. Apple mounted this keyboard on magnets, making it remarkably sturdy.

The New Face of Portability

The PowerBook G4 is quite different in its ports and expandability.

Expand Your Mind First off, the expansion bays—which allowed you to slide in an extra battery for a long flight or replace your DVD drive with a Zip drive for swapping files—are gone. This might sound distressing, but I can't think of any internal PowerBook module you can't replace with an external FireWire or USB-based device. The battery's new home is on the bottom of the PowerBook G4 (no more accidentally ejecting the battery by snagging the lever of an expansion bay); the battery can be replaced easily while the computer is sleeping. And with power-level–indicating LEDs built right into the battery, you can see how much juice is left.

Power Shortage After years of using the same power-supply specifications for all its portables (you can use an iBook power supply with a PowerBook 1400, and vice versa), Apple gave the PowerBook G4 power supply a much smaller connector. (There goes my stockpile of interchangeable PowerBook plugs.)

Ports of Call On opposite ends of the PowerBook's back edge (see "Bringing Up the Rear") are the power plug and the 4-Mbps infrared port (good news for Palm users). Sandwiched between them is the port-access door, and on the lid is the glowing Apple logo, which is now right-side-up to people viewing the portable from behind.

Inside the access door is a full complement of ports: one FireWire port, a 10/100BaseT Ethernet port, two USB ports, one VGA-out port, one S-Video–out port, and a 56K modem port.

Quest for Fire The new PowerBook has one fewer FireWire port than the PowerBook G3, but in most cases that shouldn't matter. FireWire supports daisy-chaining, and most FireWire drives have two ports. So you can connect your FireWire camcorder to your FireWire hard drive, which you connect to the PowerBook.

Ethernet to the Rescue Apple has added a new feature to the PowerBook G4's Ethernet port: it can now sense whether there's a hub or another computer on the other end of an Ethernet connection—and react accordingly. In other words, you no longer need to use Ethernet crossover cables if you want to quickly connect two Macs via Ethernet. (FireWire Target Disk mode is still available.)

This new autosensing feature worked like a dream. What didn't work so well was getting the connector to slip in and out—there's not enough room around the port to allow for less than perfect alignment.

Card Trick At the left side of the PowerBook, there's a single PC Card slot that's easy to miss—it looks like a vent (see "On the Left Side"). It can accommodate one Type I, Type II, or Zoom Video PC Card. Between that slot and a headphone jack is a built-in microphone hidden behind one of the two speaker grilles. But the microphone jack

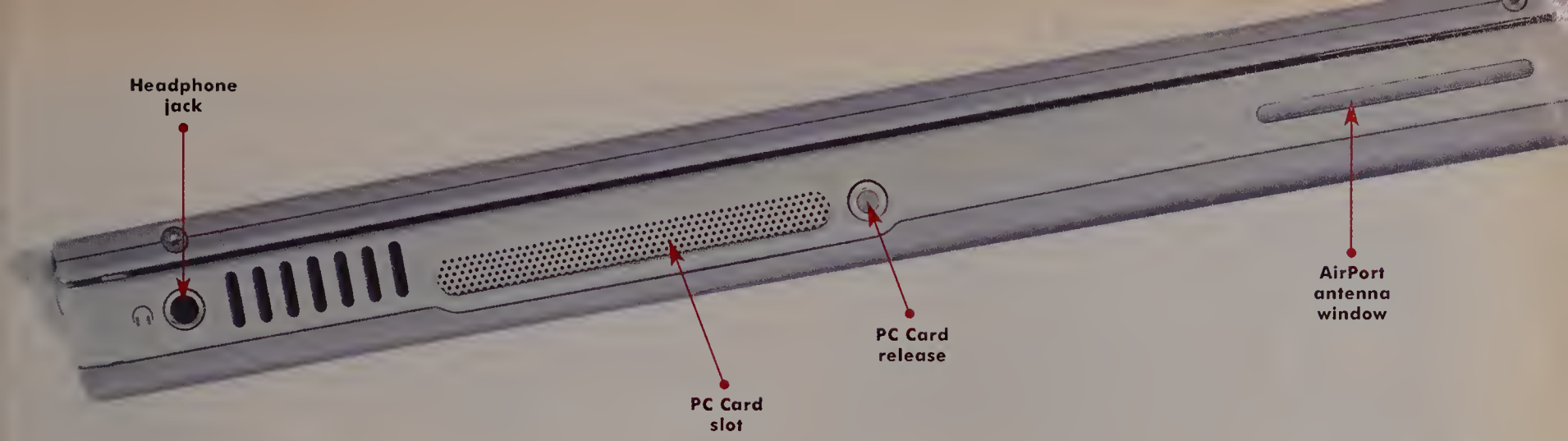
The Need for Speed

In tests that take advantage of the Velocity Engine subprocessor AltiVec (such as many Photoshop tasks), the PowerBook G4's speeds were two to three times as fast as a 500MHz PowerBook G3's. Speeds for non-AltiVec tasks were less impressive.

Reference systems in italics.
Best results in bold.
Shorter is better. Longer is better.

	SPEEDMARK 2.1	QUAKE III	ADOBE PHOTOSHOP 5.5				SOUNDJAM 2.5.2
		Normal	Gaussian Blur 10	Unsharp Mask 2.3	RGB to CMYK	Lighting Effects	MP3 Encode
Apple PowerBook G4/400	122	32	7	8	30	8	2:11
Apple PowerBook G4/500	137	35	7	8	20	7	**1:38**
Apple PowerBook G3/500	*122*	*31*	*15*	*14*	*22*	*24*	*2:41*
Apple Power Mac G4/533	***168***	***66***	***5***	***6***	***19***	***6***	*1:59*
	Better ▶	Better ▶	◀ Better	◀ Better	◀ Better	◀ Better	◀ Better

Speedmark 2.1 scores are relative to those of an iMac 350MHz (1999), which is assigned a score of 100. Photoshop scores are in seconds. Quake scores are in frames per second. SoundJam scores are in minutes:seconds. We tested each system with Mac OS 9.1 installed, 256MB of RAM, a default system disk cache, and virtual memory disabled. We set displays to a resolution of 1024 by 768 pixels and 24-bit color. We performed Photoshop tasks with a 50MB file; we set Photoshop's memory partition to 150MB and Photoshop History to Minimum. We tested MP3 encoding with an audio-CD track that was 9 minutes and 25 seconds long and converted it using a default setting of 128 Kbps in SoundJam. We tested Quake at a resolution of 640 by 480 pixels, with graphics set to Normal. Speedmark is a suite of common tasks (for more information, visit www.macworld.com/speedmark).—**Macworld Lab testing by Ulyssis Bravo**



On the Left Side

is gone, meaning you'll need a USB microphone if you want to connect a better mike.

Wider Is Better

The most striking feature of the new PowerBook may be its wide display. This 1152-by-768-pixel screen is the same height as the PowerBook G3's but 128 pixels wider. That makes a big difference if you need to manage multiple floating palettes in programs such as Adobe Photoshop, Macromedia Dreamweaver, or even Microsoft Office.

Old News Is Good News The new PowerBook uses the same screen technology as the PowerBook G3. But when you view the screens side by side, that's hard to believe. The new PowerBook screen seems brighter, and the individual pixels are more sharply focused. The overall color of the screen is bluer, and digital-source images appear much sharper and deeper, reminiscent of the Apple Cinema Display.

None of this can be attributed to the graphics controller, however, which is the same ATI Rage Mobility 128 chip used in the PowerBook G3. Instead, credit the G4 and its Velocity Engine subprocessor for smooth playback and display of video.

Strong Resolutions In addition to its native resolution, the screen can be set to five other resolutions: 640 by 480, 720 by 480, 800 by 600, 896 by 600, and 1024 by 768. Choose one with fewer horizontal pixels than the screen allows, and the PowerBook G4 places black bars on either side of the screen (for compatibility with software that defaults to one of the 4:3 aspect-ratio resolutions—games, for instance).

DVDivine The PowerBook G4 comes with version 2.4 of Apple's DVD Player software. The only apparent change is a new Fill Screen Wide option, which does a partial anamorphic rescaling of images so they fit the screen from edge to edge. Because the PowerBook G4's display does not have a true 16:9 letterbox aspect ratio, little black bars cover the top and bottom of the screen.

> The new PowerBook has a major edge when it comes to Velocity Engine–optimized tasks.

Moving Inside

There are two ways to get inside this new PowerBook. If you want to add RAM, just look beneath the keyboard. If you want to add an AirPort card or replace the hard drive, you must remove the bottom of the PowerBook.

Easy-Access RAM This new portable has the same easy-access RAM slots as the PowerBook G3. Just press down on two small latches on the keyboard and lift it off. (The RAM is the only part of the PowerBook that is user upgradeable from the top.)

Adding RAM is easy, and there are two slots. (On the 500MHz model, the bottom slot is filled with a 256MB RAM module.)

What a Wireless World You can see the AirPort card from beneath the keyboard. Unfortunately, it's not accessible from there—the PC Card socket is in the way, so you must turn the PowerBook over to reach it.

You can open the PowerBook G4's case with a Phillips screwdriver—you don't need the less common Torx screwdriver most recent Apple portables require. However, I still had a hard time; several of the screws on my PowerBook were set at an angle and were quite difficult to extract.

Lifting off the bottom cover was also a challenge. Because it's made of metal, it can bend. I ended up using the tip of a flat-head screwdriver to get the cover off.

continues

Tale of the Titanium

COMPANY	PRODUCT	MOUSE RATING	COMPANY'S ESTIMATED PRICE	CONTACT	RAM (INSTALLED/ MAXIMUM)	HARD DRIVE	GRAPHICS	PROS	CONS
Apple Computer	PowerBook G4/400	♦♦♦♦♦	$2,599	800/692-7753, www.apple.com	128MB/1GB	10GB	ATI Rage Mobility 128	G4 processor; thin; light; large screen; DVD; marquee features of the Titanium design at an entry-level price.	Non-AltiVec performance slightly worse than PowerBook G3's.
	PowerBook G4/500	♦♦♦♦♦	$3,499	800/692-7753, www.apple.com	256MB/1GB	20GB	ATI Rage Mobility 128	G4 processor; thin; light; large screen; DVD; 256MB RAM; 20GB hard drive.	Overall performance only slightly better than PowerBook G3's.

After removing the bottom, adding an AirPort card seems easy. You gently raise the edge of the slot—it should come up at an angle. Next, connect the built-in antenna plug to the card. Then slide the card into the socket and push the card down.

Tricky Storage While Apple apparently expects users to install AirPort cards (there's a somewhat vague installation diagram at the bottom of the battery-storage bay), it doesn't appear to have that attitude about the hard drive. Removing the drive requires the dreaded Torx screwdriver, as well as quite a bit of patience and manual dexterity.

Pitfalls After either operation, putting the bottom cover back on can be tough. You must slide the cover on from the front—be very careful to fit every snap into every groove, or you might bend the case.

In disassembling the PowerBook G4, I scraped its lid, scratching off some paint and leaving some ugly (and permanent) reminders of my installation experience.

Lab Tests

The PowerBook G4 performs as you'd expect a G4 Mac to perform: it's fast when using applications that take advantage of AltiVec, the G4's Velocity Engine subprocessor, and it otherwise behaves much like a G3.

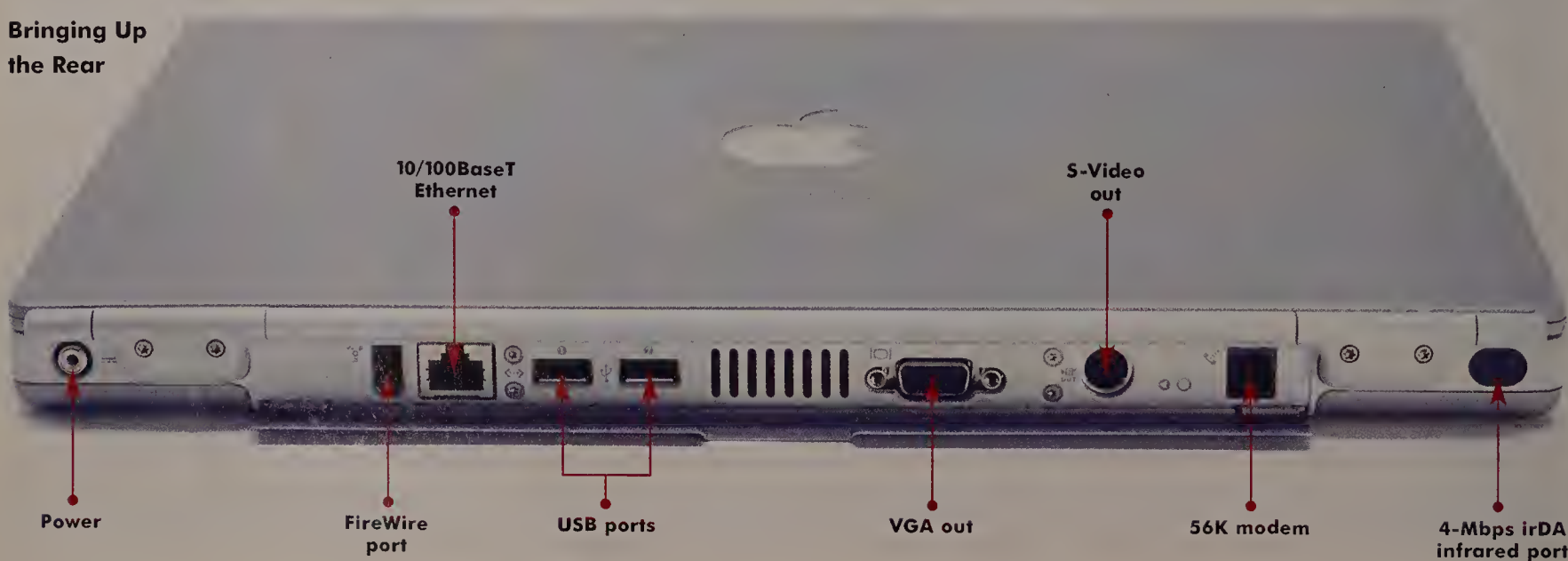
Speeding Along To see where the G4 processor has its greatest impact, consider Macworld Lab's Photoshop tests (see "The Need for Speed"). Optimized by Adobe to take advantage of Velocity Engine, Photoshop 5.5 pushes Mac hardware to its limits, and the new PowerBook has a major edge over the PowerBook G3 when it comes to tasks such as Gaussian Blur, Unsharp Mask, and Lighting Effects. Results range from nearly twice to more than three times as fast on the PowerBook G4.

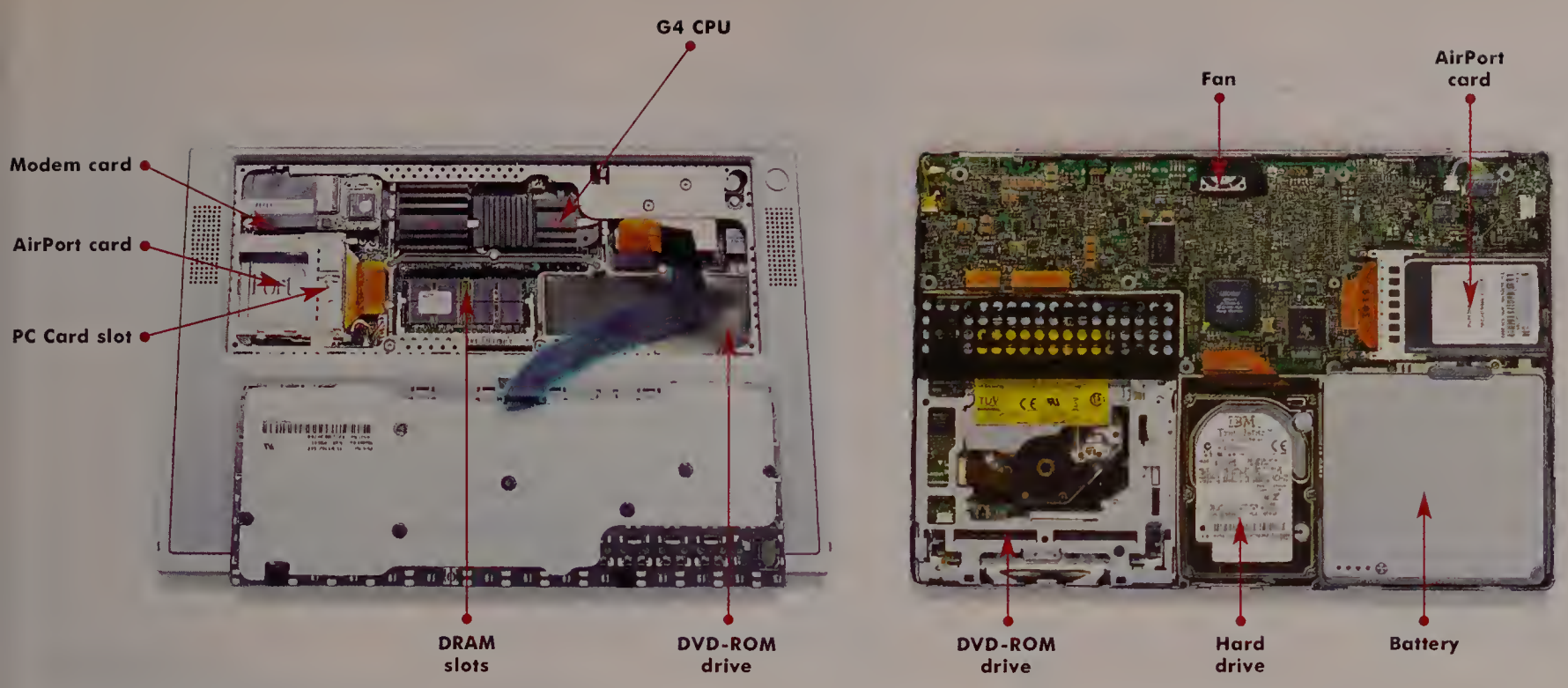
But once you exit the realm of Velocity Engine, the speed difference between old and new PowerBooks drops considerably: in a Photoshop RGB to CMYK conversion, the 500MHz PowerBook G4 is only about 10 percent faster than the 500MHz PowerBook G3, and the 400MHz G4 is about 35 percent slower.

> My die-hard PC-toting friends turned green with envy.

In Speedmark 2.1 tests, which gauge performance of a variety of everyday computing tasks, the difference in speed is smaller still. Because the rest of the PowerBook

Bringing Up the Rear





Guts and Glory Take a gander at the inside of the PowerBook G4: glimpse the goods beneath the keyboard (left) and behind the bottom (right).

G4's logic board is largely the same as the PowerBook G3's, overall performance gains are modest.

Nowhere is this more obvious than in graphics performance. (The PowerBook G4's graphics subsystem is soldered to the logic board, so it can't be upgraded.) In our Quake III tests, the scores are very close. The current version of Quake can't use AltiVec, and without AltiVec, the PowerBook G4 is only marginally faster than a G3.

Staying Power Of course, all this power is meaningless without good battery life, which Apple says is in the five-hour range. I tested this claim in three ways: maxed-out (everything running, including the hard drive and DVD drive, with processor cycling disabled and the screen set at maximum brightness); normal use (hard drive spinning up and down as determined by a script, processor cycling enabled, and the screen dimming after one minute of inactivity); and minimum power (screen dimmed, drive spun down, processor cycling enabled, and the chip clocked down to 300MHz [you can set this in the Expert Settings control panel]).

In the maxed-out test, the PowerBook managed to eke out 1 hour and 47 minutes of battery life—not bad considering the abuse I put it through. In the normal-use test, it lasted even longer: 3 hours and 12 minutes, again very respectable. And the minimum power configuration indeed delivered about 5 hours of battery life. Of course, a portable running at 300MHz with a dimmed screen and spun-down drive is no tool for a road warrior.

Burning Up Finally, Macworld Lab put both the PowerBook G3 and the PowerBook G4 on a heat analyzer and ran them for several hours under the most-demanding circumstances possible. They both reached a maximum heat between 115 and 120 degrees (Fahrenheit). (In my own use, the G4 got warm but never uncomfortably hot in my lap.)

Macworld's Buying Advice

If you're a fanatic, only the best will satisfy your cravings: you'll settle for nothing less than the 500MHz Titanium PowerBook G4. But unless you do mainly AltiVec work, the 400MHz model should meet your daily needs. And it costs much less—you can upgrade both your RAM and your hard drive and still save money.

The PowerBook G4 is a brilliant update to a product line already leading the market in price, performance, and functionality. And it passed the ultimate test—when I showed this portable to my die-hard PC-toting friends, they turned green with envy. Some even placed orders for their own PowerBook G4s the same day.

That's certainly all Apple could wish for. **m**

ANDREW GORE is *Macworld*'s editor in chief and an expert on all things PowerBook.

More Info: www.macworld.com

Type **PowerBook** in Macworld.com's Search field to get current news and reviews relating to portable computing on the Mac.

LINK

Vacuum : ON
Sprinkler:ON
Lights:ON
Temp: 70

MACWORLD'S GUIDE TO CREATING A NETWORKED HOUSE OF THE FUTURE

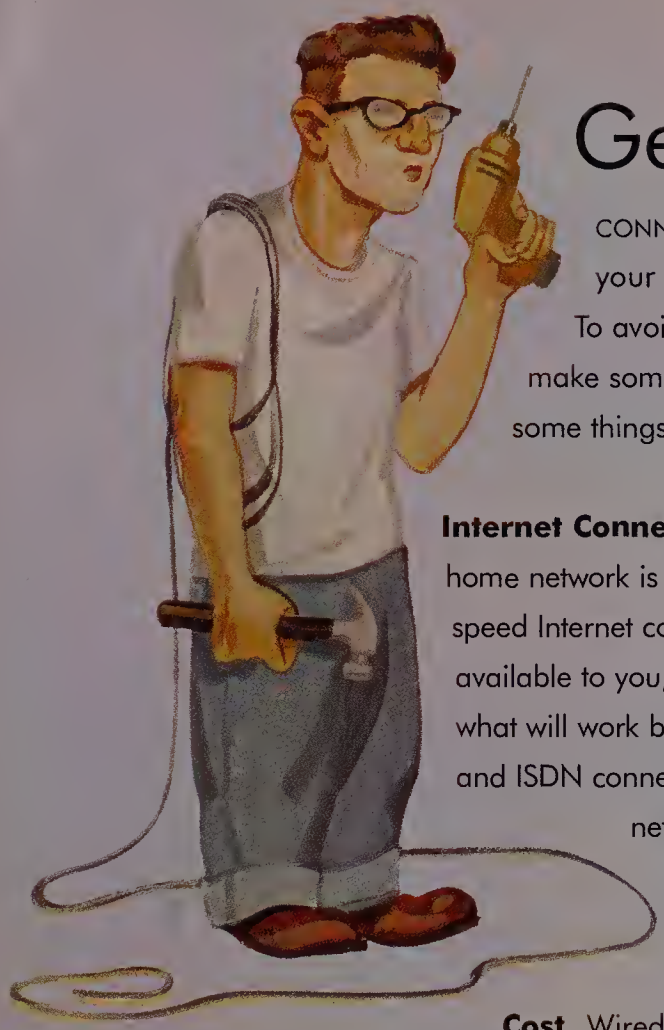
by Michael Penwarden

Envision a future in which your car, cognizant of your musical tastes, automatically—and wirelessly—downloads the perfect mix of MP3 files nightly from your home computer for the next day's drive to work. Smart washing machines clunk to life only when they sense that electricity demand—and cost—is lowest. And lights turn on when you enter a room, knowing to illuminate only faintly when you stumble into the bathroom at 3 a.m.

Science fiction? Maybe—for now. But even as we imagine the possibilities, quite a lot of them are becoming reality. You can already wirelessly access your blazing Internet connection or ink-jet printer from any computer in your home, participate in adrenaline-soaked bloodbaths via householdwide multiplayer games, and even stream MP3 files to your stereo. And a slew of new home-networking products and technologies make connecting your computers easier and more affordable than ever. Now is the time for Mac users to build tomorrow's network.

YOUR HIGH-TECH home

ILLUSTRATIONS BY ZOHAR LAZAR



Getting Started

CONNECTING YOUR HOME ISN'T LIKE WALKING your dog—it requires some forethought. To avoid hassles and pitfalls, you'll need to make some decisions before you begin. Here are some things to consider:

Internet Connection Since one of the benefits of a home network is being able to share a single, high-speed Internet connection, consider what services are available to you, how much you want to spend, and what will work best in your home. DSL, cable, satellite, and ISDN connections all can be shared through your network. (For more on your high-speed options, see "Kill Your Modem," *Macworld*, November 2000.)

Cost Wired networks are typically the least expensive, unless installation costs get out of hand. Keep in mind that what may seem quicker and more affordable right now could limit you down the road. If you know you'd eventually like to add a PowerBook to your network, for example, going wireless now might be cheaper than setting up a wired network and grafting a wireless one onto it later.

Speed How much speed do you need? Are you going to be moving big files or having the whole family surf the Web at once? While all of the products covered here claim current or near-future transfer rates of around 10 Mbps, wireless options are more susceptible to signal degradation—and therefore to slower speeds.

Compatibility Are you intrigued by HomeRF-compatible devices (see "The Automated Home") or other cutting-edge networked technologies? Do a little research to make sure the networking standard you choose will work with the equipment you hope to incorporate later.

Difficulty Just because your Macs have built-in Ethernet doesn't necessarily mean that an Ethernet network is the most straightforward way to go. Be sure to balance the benefits of any particular network against how demanding it will be to set up, operate, and expand. Also, honestly evaluate your pain threshold for things such as IP addresses, subnet masks, and other technical minutia before choosing an ambitious do-it-yourself solution.

Mobility Where do you plan to put your computers? If your network includes PowerBooks or notebook PCs, it'd be silly to require them to be plugged into a stationary object to connect with one another. Even if you have two desktop machines in distant parts of your house—upstairs and downstairs, for example—you might be better off wire-free.

Chances are, by now yours is among the 17 million households that, according to the Yankee Group, include more than one computer. And although only 2.5 million households were networked at the end of 2000, that's nearly four times more homes than the year before.

Our guide will outline the options available for creating an affordable network as quickly and painlessly as possible. (Even your old Macs can get in on the action—look for our upcoming series "Old Mac, New Tricks," which is about turning ancient machines into useful additions to your network.)

WIRED VERSUS WIRELESS

The first and most important step in shaping your network is choosing which type will best suit your needs, pocketbook, and level of expertise. You may decide on a wired network (Ethernet or HomePNA), a wireless one (AirPort or HomeRF), or a combination of the two. Read on to explore what each of these technologies has to offer.

Ethernet

Ethernet has been around for years—it's what you'll find in most corporate networks. Ethernet ports are built into all modern Macs: models including and later than the Quadra 635, Performa 6110, Centris 610 (as an option), Power Mac 5500, and PowerBook 520 (except for the 1400). If you're using such a Mac, you're already halfway there. Most of today's Ethernet networks use 10BaseT, a protocol that moves data at 10 Mbps. Newer Ethernet standards allow transfer rates of 100 Mbps or 1,000 Mbps (one gigabit). However, it's likely that hardly anything on your network will

work at those speeds, so faster protocols probably aren't worth the extra expense—especially when you consider that 10 Mbps is more than enough for several computers to comfortably share an Internet connection (see "Fast Enough for You?").

Still, when you choose cabling, be sure to spend the extra money for *Category 5* Ethernet cables. These support 100BaseT, so if you decide later to upgrade, you won't have to purchase—or install—new cables. (Gigabit Ethernet, however, will require new cabling.)

Pros If you're connecting multiple computers in the same room, Ethernet is your best bet. It's fast, flexible, and reasonably inexpensive—and most of your computers should already have built-in Ethernet support.

Cons Ethernet's biggest drawback is that it may force you to run cables through your walls. Some newer homes come equipped with the proper cabling, but in many cases it's the very prospect of drilling holes and stringing cable that's kept us from linking our computers already.

Ethernet is also somewhat more complicated to set up than the ready-made solutions we'll explore; you have to purchase several pieces of hardware and software and get them all working together.

If your computers are scattered throughout your house, connecting them by Ethernet makes less sense than it used to. Other options that don't require carpentry skills offer similar speeds and simpler setups—or will offer them soon.

Price A simple crossover cable to connect two computers costs about $10; a hub, around $40. If you're sharing a broadband connection, you'll need a combination router and switch called an Internet gateway, which costs about $250.

HomePNA

The HomePNA standard allows computers to use ordinary telephone lines to move data throughout your home. Farallon's HomeLine Starter Kit (♦♦♦½; www.macworld.com/2000/08/15/reviews/homeline.html; 510/346-8000, www.farallon.com), currently the only HomePNA product for the Mac, provides everything you need to connect two computers.

To set up a HomeLine network, simply add the HomeLine adapters to your computers, plug both your telephone and the line to your phone jack into the adapters, and then install the included software. You'll still be able to use your telephone without interference, since HomePNA signals (like DSL) work at a different frequency than voice calls do.

HomePNA networks currently operate at 1 Mbps, but a new HomePNA 2.0, promising Ethernet-equivalent speeds as high as 10 Mbps, is due this summer.

Pros If you're networking desktop Macs throughout your home and you don't want to run wires through your walls, a HomeLine network is the most affordable way to get connected. Setup is simple; everything you need is supplied.

And once products adhering to the new HomePNA 2.0 standard have arrived, HomePNA should be fast enough to meet just about anyone's needs.

Cons At present, only 1-Mbps transfer rates are available, making HomePNA the slowest networking option—ten times as slow as Ethernet. Although this is fine for sharing a broadband Internet connection, a printer, and typical files, you'll notice a significant drop in performance if you're sharing larger files or if several people hit large Web sites at once.

Wireless networks offer more flexibility than wired ones—for you that may mean answering e-mail from your sofa or hooking up machines on opposite sides or different floors of your house.

Price A starter kit for two computers costs between $100 and $165, and you can add computers to your network for $60 to $90 each.

AirPort

Apple's AirPort (800/692-7753, www.apple.com) was the first wireless networking technology to appear on the Mac. It allows your computers to stay connected when they're within 150 feet of your wireless gateway.

AirPort networks offer theoretical speeds as high as 11 Mbps, putting them on par with Ethernet networks. In the real world, however, AirPort transfer rates are affected by electrical interference and are typically slower.

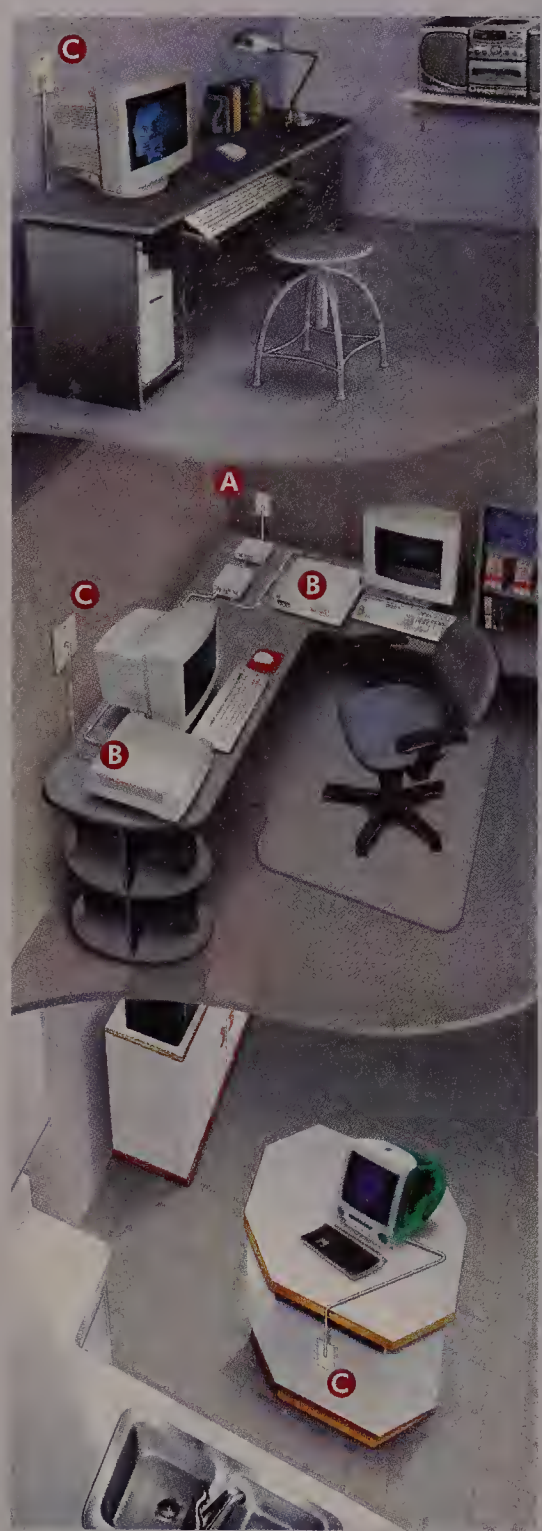
Because AirPort networks are based on the industry standard 802.11 protocol for wireless data communications, you can also connect non–AirPort-equipped Macs and

continues

Home, Sweet Networked Home

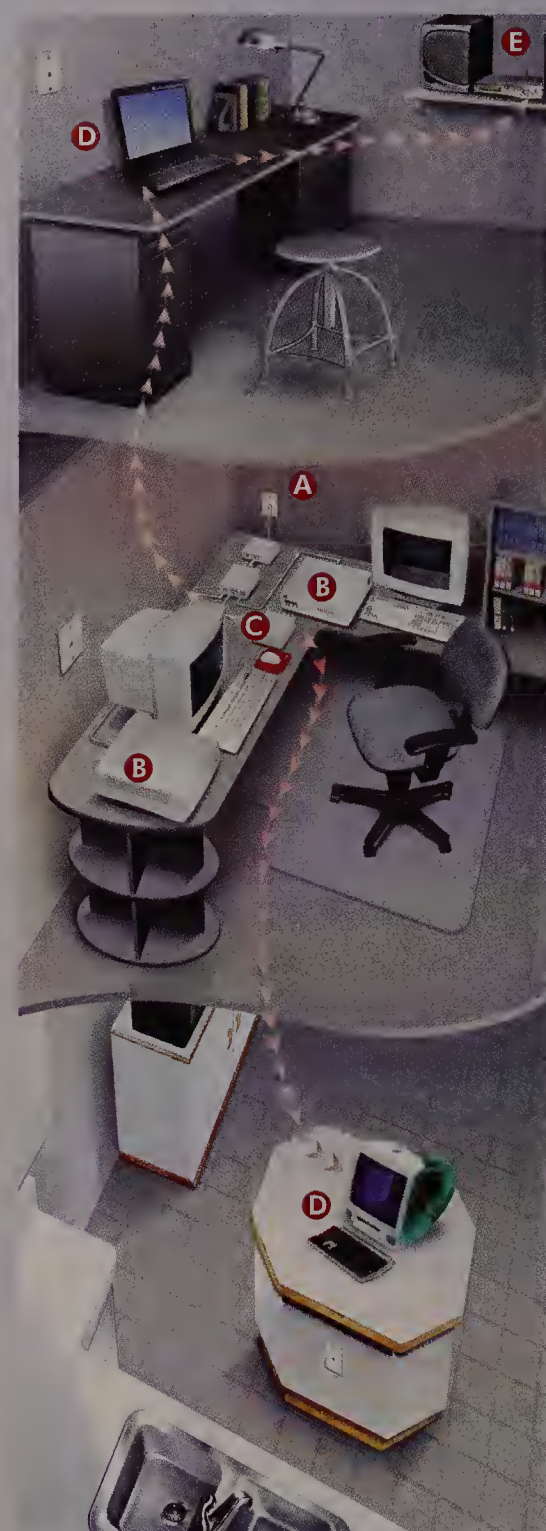
CHOOSING YOUR HOME-NETWORKING SOLUTION WILL INVOLVE many factors—including the age of your Macs, where you want them to go, and whether they'll stay put. If your computers will be stationary, HomePNA, Ethernet, or a combination of the two technologies may be best for you. If you have portable computers, you may prefer wireless options such as AirPort or the more versatile HomeRF, which lets you network other devices, too. Here are three scenarios:

HomePNA



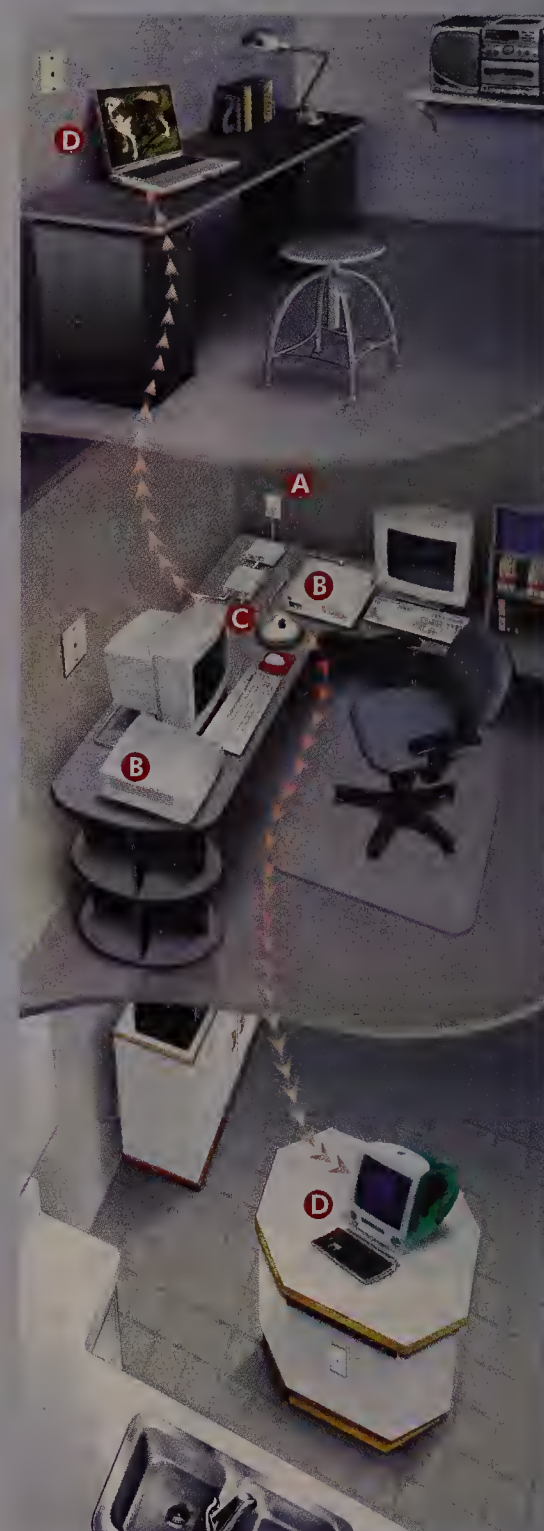
A HamePNA netwark is a gaad chaice if yau have alder Macs (pre-AirPart) that will stay in the same lacatian. Bring yaur high-speed Internet cannection inta a central lacatian A and share it via Ethernet B with the camputers in the room. Cannect HamePNA-equipped computers in ather roams ta a phone line C ta add them ta your netwark.

HomeRF



Cansider HomeRF if yau have alder Macs (pre-AirPart), including portables. Bring yaur high-speed Internet connection inta a central lacation A and share it via Ethernet B with the camputers in the roam. A HameRF gateway C will let you wirelessly netwark camputers in ather rooms D, as well as HameRF-enabled products such as a SimpleFi sterea campanent E.

AirPort



An 802.11 network is easiest if you have mostly AirPort-ready Macs. Bring your high-speed Internet connection inta a central location A and share it via Ethernet B with the computers in the room. An AirPort-campatible base station C will let you wirelessly network computers with AirPort cards D in other rooms.

TERRY PACZKO

Fast Enough for You?

TECHNOLOGY	MAXIMUM SPEED (IN MEGABITS PER SECOND)*
AirPart (802.11)	11
Ethernet	10/100/1,000
HamePNA	1**
HomeRF	1.6**

* These are thearetical maximums that will nat be reached in mast circumstances.
** These speeds are expected ta be 10 Mbps by later this year.

PCs to your AirPort network. Just add a device such as Agere Systems' (formerly part of Lucent Technologies) $160 Orinoco Silver PC Card (♦♦♦♦; *Reviews*, June 2000; 800/928-3526, http://wavelan.com) or Farallon's $77 SkyLine 11Mb Wireless PCI Card.

If your network has at least one stationary AirPort-compatible Mac, you can set it up as a software base station to control communication among all of your machines (you must leave the base computer running). If all of your Macs are mobile, you'll need to buy Apple's $299 AirPort Base Station (♦♦♦½; *Reviews*, February 2000) or another Mac-compatible base station, such as TechWorks' AirStation ($279; 800/688-7466, www.techworks.com), to connect them to each other and to the Internet. The base station manages the distribution of data within your network, as well as to and from the outside world, via your ISP. Apple's Base Station includes an RJ-45 connector, for hooking up a cable or DSL modem, and a standard RJ-11 phone jack connected to a built-in 56K modem.

Pros Wireless networks offer far more flexibility than wired ones do—for you that may mean answering e-mail from your sofa or simply hooking up two machines on opposite sides or different floors of your house.

AirPort is also the fastest wireless network option currently available, and every machine Apple has introduced since mid-1999 is AirPort ready (with a built-in AirPort antenna).

Cons Wireless networks are more expensive to set up than wired networks, since you must purchase wireless network cards and an Internet gateway. Expect to spend about $100 more per computer.

And AirPort technology is not compatible with all ISPs, though the newest version (1.3) supports Dynamic Host Configuration Protocol (DHCP) client IDs, used by major broadband companies such as AT&T's @home.

Price An 802.11 wireless gateway costs between $280 and $300. Cards for each machine are priced between $75 and $190.

Macs are relatively safe, but an Internet connection that's always on—such as DSL or cable—can potentially leave a security hole between your home network and the Internet.

HomeRF

The fourth option worth considering is HomeRF, which will shortly become available for the Mac in the form of Proxim's Symphony-HRF networking suite (800/229-1630, www.proxim.com). Like the 802.11 standard, HomeRF operates wirelessly over radio waves, and it uses a wireless gateway to manage communications between computers, as well as with a broadband ISP.

But the HomeRF standard was developed to be compatible with other upcoming wireless devices, too. Already we're seeing HomeRF voice and streaming-media products, as well as HomeRF cordless telephones and stereo components (see "The Automated Home").

According to Proxim, HomeRF products clock in at 1.6 Mbps, which is sufficient for most home situations. Proxim's Symphony PC Card costs $130; the Symphony Cordless PCI Card, $120; and the Symphony-HRF Cordless Gateway, $199.

Pros HomeRF technology can do more than network your home's computers—it also extends to other devices in the home.

As with HomePNA, a new HomeRF 2.0 standard will soon allow 10-Mbps data-transfer rates.

Cons Current HomeRF products are ten times slower than those based on 802.11, and although those speeds are adequate for most home situations, you'll notice a difference when many people are using the network.

Another limitation is that the Symphony-HRF Cordless Gateway has only an Ethernet connection, so you can't use it with a dial-up connection (as you can with AirPort).

Keep in mind that if you decide to add modern Macs to your network in the future, you'll need to buy HomeRF cards for them as well, rather than tak-

continues

ing advantage of the new Macs' built-in AirPort readiness. (At this point, the cost difference is only about $30.)

Price A HomeRF wireless gateway costs about $200. Cards for computers cost about $125 each.

NETWORKING TIPS

Now that you've selected the devices you'll use to put your network together, you need an idea of how they'll all *work* together. Unless you're setting up an Ethernet network, much of this work will be done for you: buy a setup kit for the network of your choice, and plug the pieces in—the installation software takes care of the rest. Still, there are some important things to understand and keep in mind.

Wire It Up If you decide on Ethernet, make an honest appraisal of your home-improvement abilities. You'll need to drill holes and measure and lay cables inside the walls, along the outside of your house, or in the crawlspace. If that kind of bloody-knuckle work isn't your bag, check with local electricians—or, often a better bet, with someone who installs alarm systems in your area.

Printer Sharing To share your standard printer among your computers, make sure you have the Printer Share extension in the Extension Folder of all of your Macs; then install the appropriate printer driver on each machine. Open the Chooser, select the printer you want to share, and then click on the Setup button. When the dialog box appears, select Share This Printer and enter a name for it. If you want to limit access—a good security practice while you're connected to the Internet with an IP-based printer—you can add a password. (To share a USB printer connected to a Mac, you'll need to download Apple's free USB Printer Sharing control panel from the Support area of www.apple.com.)

File Sharing and Security Macs are relatively safe, but an Internet connection that's always on (such as DSL or cable modem) can potentially leave a security hole between your home network and the Internet. To protect your network against intruders, open the File Sharing control panel on each computer on your network, and enter a user name and password.

Internal security may also be a concern. To prevent your teenage daughter from browsing through your Quicken files (or your dad from reading your e-mail), use a different name and password for each machine.

Now you can use the File Sharing control panel to set the level of access you want each user in your network to have. It's safest to deselect the Enable File Sharing Clients To Connect Over TCP/IP option. (For more on security, see "*Macworld*'s Internet Privacy Guide," July 2000.)

Crossing Platforms If you need to include PCs in your network, you won't have any trouble hooking

continues

The Automated Home

DID YOU KNOW THAT YOU CAN CREATE A sprinkler system that knows how much to water your lawn by monitoring rainfall amounts? Or that you can control lights and security systems using just your voice? These things may be easier than you think.

Basic home automation has been around since the 1970s, when the X10 standard first enabled simple controllers to send on and off signals through a home's electrical system to X10-compatible light switches or outlets. As you might imagine, things have gotten a little more sophisticated over the decades. In a world where technological standards come and go, X10 still offers a simple, affordable way to control devices throughout your home.

The iRobot-LE, from iRobot, can look after your vacation home or pets.

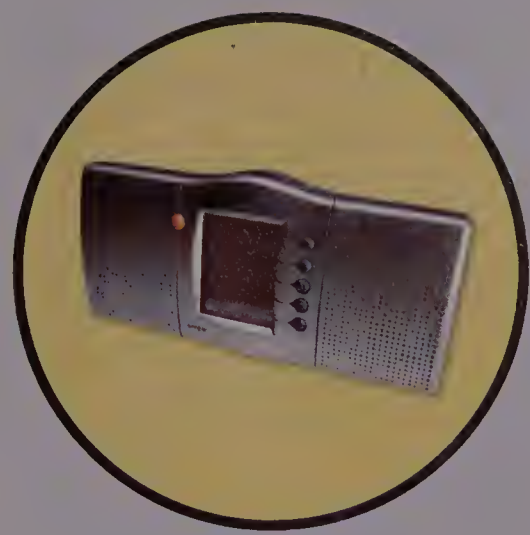
Now you can buy X10 modules ranging from a $10 dimmer switch to Web cams or motion sensors that cost $150 or so. Even better, thanks to programs such as Sand Hill Engineering's XTension home automation software ($90; 407/349-5960, www.shed.com), your Mac can control everything. XTension allows you to create scripts for all of your X10-controlled devices so they "react" to stimuli from motion sensors, clocks, or weather stations. (For reviews of Mac X10 products, visit Macworld.com's Home Networking subject page at www.macworld.com/subject/homenetworking.) For example, you can have the TV news, coffee maker, and lights come on when it's time for you to wake up, and then automatically shut down once you've left for work.

One of the best things about X10 is that you can expand its functionality over time. You can start simply and then add modules as you come up with new tricks you'd like to teach your house to do.

Other options, such as Belkin Components' extravagant Signal Point system (310/898-1100, www.belkin.com), focus on home control—the ability to manage your electronics, including computers, from anywhere in the house.

The Signal Point system includes new outlets with Ethernet and cable TV connectors, as well as IR ports to use with handheld remote-control devices. You get an Ethernet network for your computers, plus the ability to watch and control a DVD player in your living room from the TV in your bedroom; to distribute stereo music to speakers with volume controls in every room; and even to view and interact with your computers through any TV in your house via a wireless keyboard.

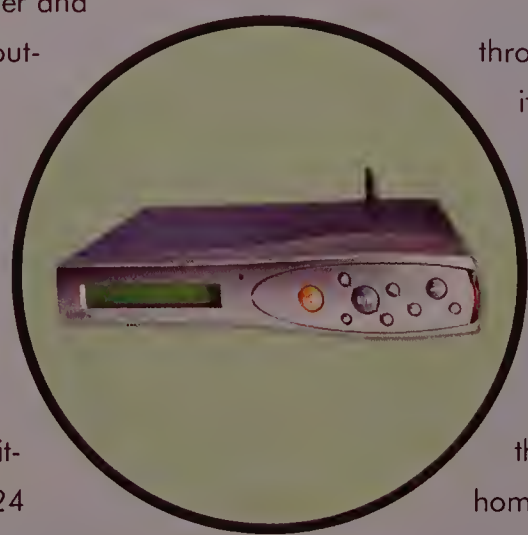
SignalPoint makes the vision of a fully integrated, wired home a reality, but it comes at a price: the starter kit—with the Connectivity Center and all the cabling, wall outlets, and even the tools you need for the job—costs about $2,400. Installation requires a solid weekend of drilling and sawing by a do-it-yourselfer (or about 24 hours of work if you have it done professionally).



Wake up to Internet radio with the SimpleClock, from Simple Devices.

As for the HomeRF standard, more devices and capabilities will become available as the technology gets faster and gains acceptance. For example, Simple Devices (650/254-2901, www.simpledevices.com) has announced SimpleFi—a stereo component that will use the HomeRF standard to download or stream MP3s from your HomeRF-equipped computer for playback on your stereo system.

Then there are the HomeRF-based robots from iRobot (888/776-2687, www.irobot.com), which enable you to check on your pet's whereabouts while you're at work or remotely monitor your vacation home. Just access your home computer from your private iRobot Web site to navigate your iRobot through the house, and use its built-in camera, speaker, and microphone to interact with its surroundings.

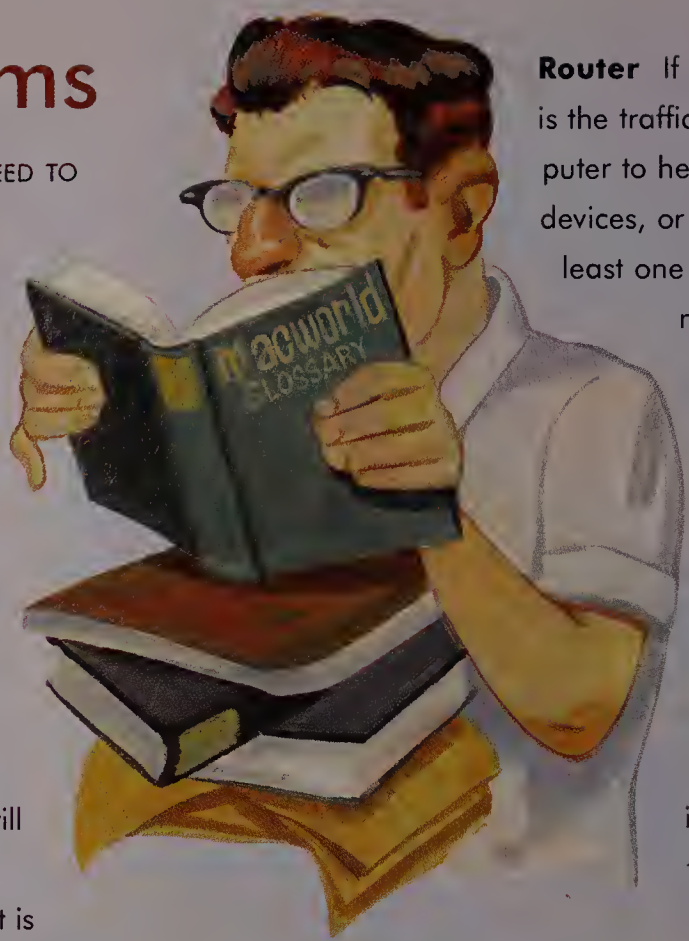


You can use the SimpleFi, from Simple Devices, to send your MP3s to your hi-fi stereo.

The era of the automated home is just beginning—so now is the time to prepare your home network for the future.

Coming to Terms

TO BE A HOME NETWORKING WHIZ, YOU NEED TO talk the talk. Here are a few terms.



Category 5 This is the type of cable you should use to physically connect an Ethernet network. Less-expensive options are available, but Category 5—or *Cat 5*—cabling is compatible with both 10BaseT and 100BaseT protocols, so it keeps your future options open.

Network Adapter (or Network Interface Card) No matter which way you go, every machine on your network will need to interface with the group; that's where NICs come into play. Since Ethernet is built into most Macs, you won't need Ethernet adapters unless you're using older Macs or unequipped PCs. Machines on HomePNA, HomeRF, and AirPort networks also require specific hardware to communicate.

Hub A hub is like a traffic roundabout for your data—all data enters it and then goes around until it finds the exit to its intended destination. Hub models have different numbers of ports; for most home networks, four or five will do the trick.

Router If a hub is the roundabout, a router is the traffic cop telling the data which computer to head for. Routers can be physical devices, or software if your network has at least one computer that is constantly connected to the Internet. (See Macworld Lab's router roundup elsewhere in this issue.)

Gateway There are routers all over the Internet, busily moving data from place to place. But the router at the "front door" of your network, distributing information among the machines in your house, is called a gateway. Like routers, these can be hardware or software.

Firewall Simply speaking, a firewall is a way to keep the bad guys out of your network. In corporations, expensive hardware firewalls are essential to secure the information stored on internal networks. In most homes, though, the threat isn't quite as serious; you can go a long way with software protection or by password-protecting your network's File and Printer Sharing capabilities. Some gateways—such as Proxim's Symphony-HRF Cordless Gateway—include firewall capabilities.

everything up. Every option covered in this story is offered in both PC and Mac versions. But to get the most out of a cross-platform setup—so all computers see each other in a way that lets them share files, peripherals, and Internet access—you'll need cross-platform software. To add a PC (or two) to your Mac network, install Miramar Systems' PC MacLAN ($199; ♦♦♦♦½; *Reviews*, June 1999; 800/862-2526, www.miramar.com) on the PC, and your Macs will treat it like one of their own. If you're starting with PCs and adding a Mac or two, check out Thursby Software's (817/478-5070, www.thursby.com) Dave ($149) or MacSOHO ($99; ♦♦♦♦½; *Reviews*, February 2001), or Connectix's DoubleTalk ($99; 800/950-5880, www.connectix.com)—all install on your Macs and let them access PC networks.

THE LAST WORD

A broadband connection will soon become the standard pipe through which all digital information enters—and exits—your life. Movie sites will allow you to download, directly to your living room, films you want to watch; telephony features such as voice mail, call forwarding, distinctive rings, and even video conferencing will be managed by the same service.

In short, home networks will no longer be reserved for computing's manic fringe; they're quickly becoming part of the home-computing experience. So go out there and get ahead of the curve—while you still can. **m**

MICHAEL PENWARDEN, a former *Macworld* editor, is a freelance journalist. He has collaborated on several "cyberhomes" showcasing advanced home-automation and networking technologies.

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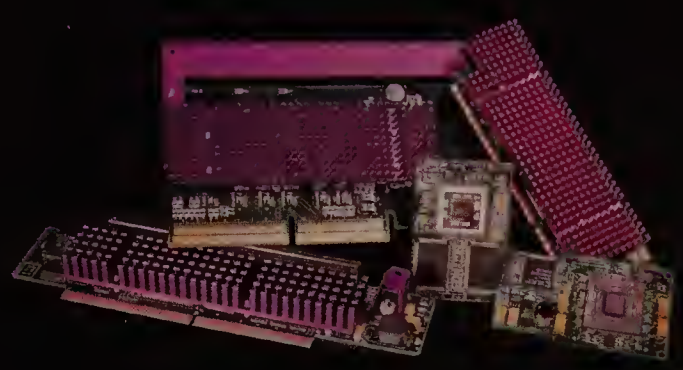

Circle 133 on card or go to www.macworld.com/getinfo

• Illustration by James Steinberg

TEST DRIVE YOUR WEB SITE

BY LISA SCHMEISER

You Can Use a Prototype to Make Sure Your Site Is Roadworthy before You Go Live

Before sending their latest, sleekest models into mass production and signing up aging musicians for advertising campaigns, auto makers spend extraordinary amounts of time and money repeatedly pulverizing their new creations. They hurl the cars into steel walls, race them over bone-jarring terrain, and leave them baking for hours at supernova temperatures. The companies know that it's safer—and cheaper—to discover potentially fatal flaws and malfunctions before they offer their products to the public.

This is a lesson that Web developers would do well to learn. Although a poorly conceived Web site will probably not spontaneously catch fire, it may nonetheless cause serious heartburn for the luckless designers who must rebuild the flawed site from scratch.

Making changes to a Web site once it's finished can be a costly and painful

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ROUTE
404
DEAD
END

experience. But you can avoid this scenario by first creating and testing a *prototype* of your site—a scaled-down working model of the finished product. A prototype lets you get a first look at what users will see as they click through your site, and it can expose unforeseen flaws in your structure and navigation. This gives you a chance to fix glitches *before* they send your site—and your reputation—up in flames.

Best of all, building a Web-site prototype can be quick and easy.

Why Prototype?

A Web-site prototype is a bare-bones, clickable model of your site. Although it's just a collection of simple, hyperlinked documents, you can use it to set up and test your site's content organization and ease of navigation.

Building a working model of your Web site—even though you could spend that time building the actual site—is worth the effort. Your Web site's launch is not the time to find out that users get hopelessly lost in a maze of dead-end hyperlinks and confusing paths. By laying down a site's groundwork early, you save yourself forehead-slapping moments and angry user e-mails later on.

The best time to start the prototyping process is the moment after you decide you're going to build a Web site. Although there are several effective software tools that can help you prototype your site (see "A Helping Hand"), you can actually complete the entire process with nothing more complicated than a pen, a pad of paper, and a basic HTML editor.

STEP 1

ORGANIZE YOUR CONTENT

Before you start building your test site, you should spend some time and mental energy deciding how your final site will be structured. Knowing that you want a site devoted to the grooming habits of monkeys, and actually presenting the information in the best way, are two very different things. But no matter how hefty—or strange—your Web site is, you can simplify the organization process with the following three-pronged strategy:

Draft a Site Tree Your first challenge is to draft a broad organizational scheme for your site's contents. You need to find logical ways to group your information, so readers can quickly find what they need. For this, you'll want to create a *site tree*, a diagram of how your site's pages are linked together. A site tree, also referred to as a site map, starts with a single Web page (typically the home page) and branches out to show every page to which it links. The process is then repeated for each of the subsequent pages until a full view of the Web site's hierarchy is outlined (see "Bird's Eye View").

When you create a site tree, the hardest part is figuring out what organizing principles you should use to sift content into specific areas. To get started, ask yourself a simple question: What do I want people to do on my site? Use the answers—read news, search the site, and send feedback, for example—as the primary categories of your site tree, and group your pages accordingly.

As you create your site tree, keep an eye out for signs of potential trouble. For example, a site tree that is extremely shallow and wide may indicate that your structure is too unfocused and that some information should be nested into broader categories to add depth to your site.

Identify Your Information Once you've outlined your Web site's basic structure, you should start brainstorming to come up with all the specific pieces of information you'll need. This step is detail oriented and can be overwhelming if you

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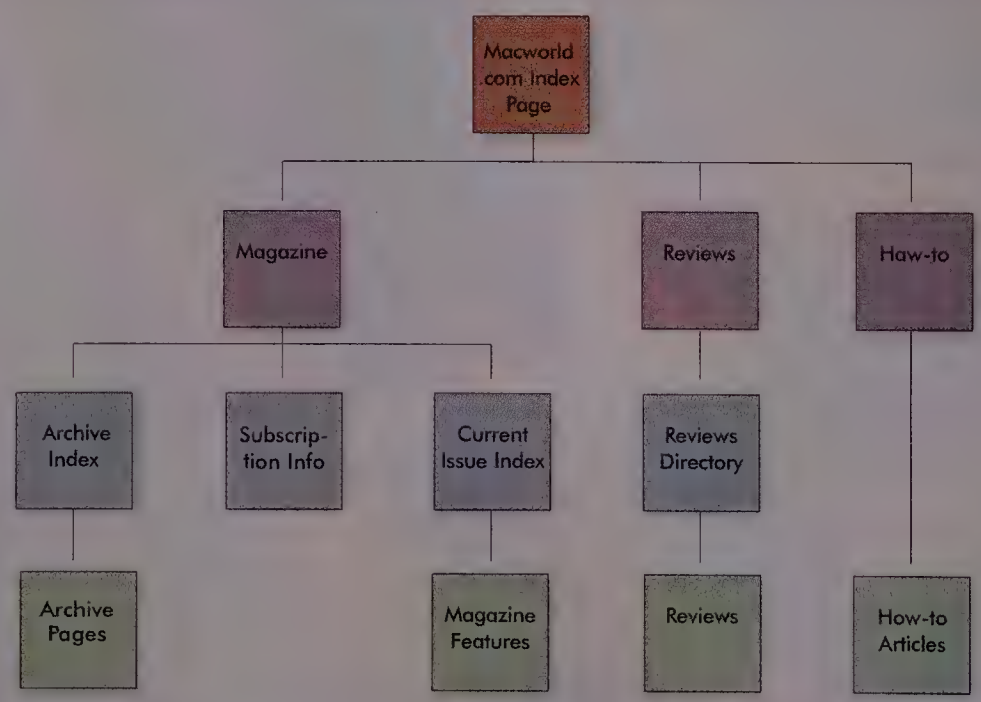
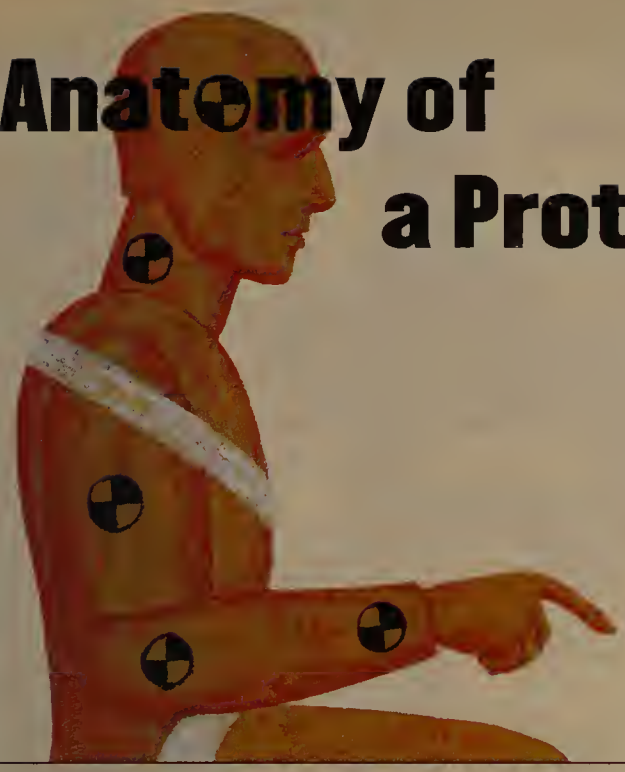
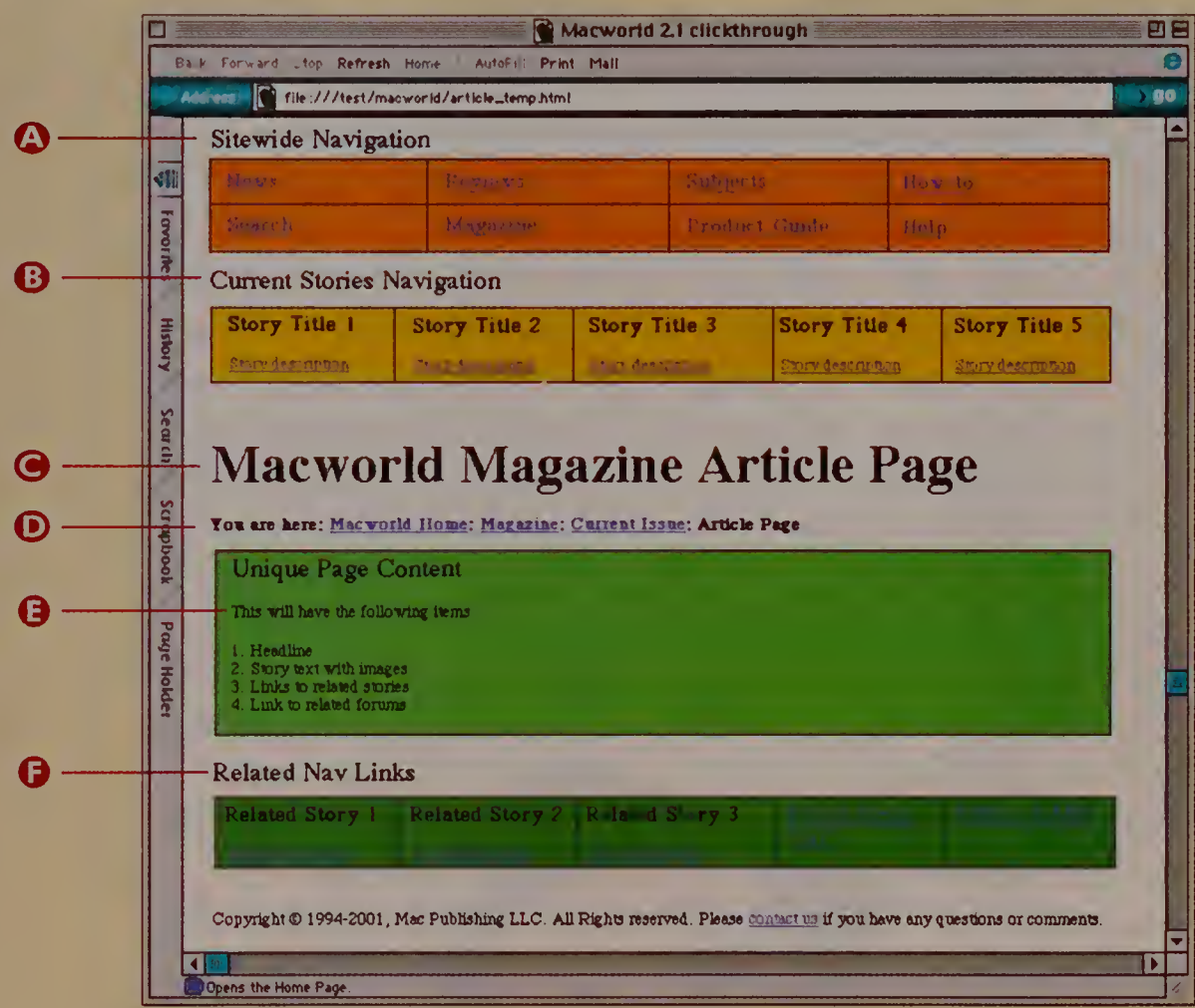


Bird's Eye View A simple site tree can help you visualize your Web site's structure and the number of clicks it will take to drill down to specific information.

Anatomy of a Prototype



An effective functional prototype should show explicitly how all of the information in your site is linked together. This no-frills page illustrates the types of information you'll want on a typical prototype page. Although this page looks nothing like the finished, designed version, users can quickly see what content will live on the page and how the page relates to the rest of the site.



A Primary Navigation If your Web site has several distinct sections, you'll want a way to guide readers to each section. This group of pages is your reader's primary means of navigation through the site; be sure to include it in your prototype so you can see what it will be like for users to move up and down the different sections of your site.

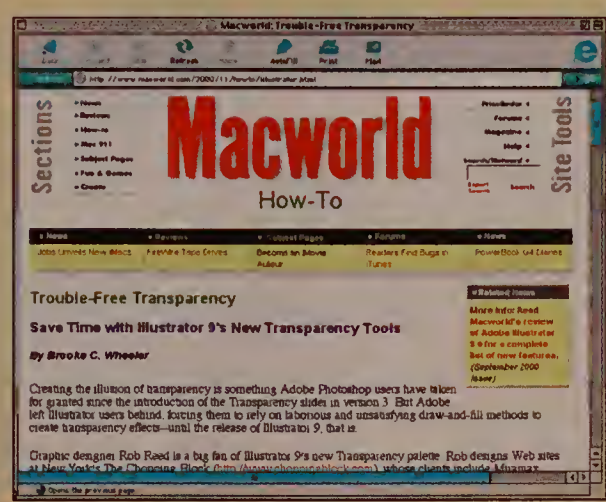
B Secondary Navigation Each specific page in your prototype has a unique place on the site; that does not preclude it from being part of a collection of pages in a specific level of your site tree. This second group of navigation links lets users move laterally between pages in a group on the site tree.

C Page Title This descriptive name tells you and your testers exactly what this page is supposed to do.

D User's Path This "breadcrumb navigation" may or may not make it into the final design, but it's invaluable for the prototype. The drill-down list of links lets you see how users can get to the page and confirms an individual's page place within the site prototype.

E Page Description When you're building the prototype, writing a short blurb that describes the type of content on each page is useful. As you flesh out the prototype, replace the descriptive blurb with the actual content that will occupy the page; this will help you model the way that a user will find and read information.

F Page Links If you're planning on including links related to specific page content, call them out in a separate list. This list will help you later when you're trying to match the correct hyperlink to individual pages.



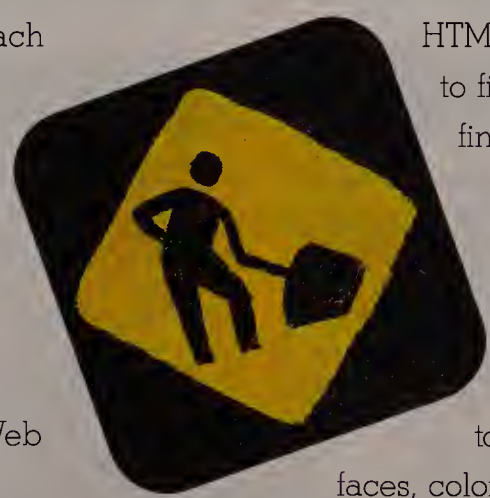
The Finished Page

don't take a logical approach. It may help to first divide your content into three categories:

- **Navigation Information** This covers how to use the site, including specific names for navigation links and details on using site tools such as a search engine.
- **Site Information** This is the data that gives users information about the Web site as a body of work. It may include contact information, design credits, or a table of contents.
- **Unique Content** This encompasses the words, scripts, and images that will compose the primary information on the site.

Next, start listing the specific information that will fill each category. You may find it helpful to use different-colored Post-its to correspond to different types of information. For example, write navigation options on green notes, unique page content on yellow ones, and contact information on blue ones. This visual system comes in handy later, when you need to see how much and what type of information is going to be on each page of your site.

Storyboard Your Site Your next step is to connect each piece of information with the site tree you created, to make sure the two mesh. To do this, you'll create a *storyboard,* a page-by-page map of your Web site's content.



One of the fastest and easiest ways to storyboard a Web site is to find a flat surface, a few blank sheets of paper, and the color-coded sticky notes you created when identifying your content. Each sheet represents a different page within the site tree. Simply go through your sticky notes and attach each one to the appropriate page.

As you work, you'll want to delete or add pages as you notice that they contain too little or too much information to be genuinely useful. This is also a good way to see early on whether you're missing any important information that you'll need to create.

STEP 2

MAKE A FUNCTIONAL PROTOTYPE

After you've mapped out your site-wide structure and content, it's time to turn your map into a clickable model. For this, you'll need to make a *functional prototype.*

Functional prototypes (also known as *wire frames*) simulate the feel and function of your finished Web site by constructing its basic framework of hyperlinked pages—minus time-consuming elements such as graphics or even finished body text (see "Anatomy of a Prototype").

You can use this prototype to test the effectiveness of your site structure by following the steps people will take to perform a task on your Web site. And because the prototype is no more complicated than HTML and text, it's easy to fix problems when you find them.

It's important to remember that a functional prototype does not have to be beautiful—it merely needs to be useful. Use font faces, colored table cells, or other visual cues to identify specific types of information. Don't fret if they clash.

Thanks to your detailed storyboard, building your functional prototype in any HTML editor should be a piece of cake. Here are some fundamental rules to keep in mind while constructing your prototype:

Simplify File Names When saving your files, keep your file-name scheme simple and functional. This will help you remember the names of the files as you link and cross-link your pages, and it will prevent confusion. For example, if you have a news section on your site with several pages, you will probably find the file names *news_index.html, news_archive.html,* and *news_search.html* more helpful than *news-1a.html* and *news-1b.html.*

Also be sure to organize your folders and documents exactly as you plan to for your final site, including the same file names and hierarchy. This will help you sort out any problems you may have in your filing system and help you grow accustomed to maneuvering through your site.

Stick to the Basics Keep your prototype extremely simple. This makes it easier to test and modify. All you want on your prototype's pages are text and hyperlinks: the text describes or comprises your site's content, and the hyperlinks offer access to the navigational byways of your site.

Coordinate Colors Use color to identify different types of information. For example, shade table cells orange for information that tells you how to use the site, and use green for unique content. This kind of color code provides a rapid way to check the types of information that a page holds.

Prioritize Page Content Position the information on your pages according to function and priority. I always place my site navigation at the very top of a page because that makes clicking through my site tree easier. If you're primarily concerned about your site's editorial flow, consistently make text the main thing on a page.

continues

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Once you've built all the pages within your site tree and hyperlinked them to one another, you should have a complete skeletal model of your Web site.

STEP 3

TEST YOUR PROTOTYPE

Now that you've built it, you're ready to take your prototype out for the all-important test drive. Enlist a few friends and coworkers (who didn't work on the prototype with you)—and ask them to click through your model. For the most-honest results, make sure you select a group with varying degrees of Web proficiency and familiarity with the subject matter. Get their reactions, and find out what made sense and what didn't.

A quick and effective way to test the organizational structure of your prototype is to ask your volunteers to perform a series of information-finding tasks on your site. Give your volunteers a goal—finding the site's contact information, for example—and ask them to log all the pages they visited while trying to perform your task. You'll see how your idea of information organization meshes with a user's idea of how a Web site is supposed to behave.

After you've tested your prototype, you can use the new-and-improved model as the foundation of your finished Web site. Since the whole point of a prototype is to give you a working model of the Web site you want to build, it would be a shame to throw away the model once you've finished with it. Instead, simply drop your design and the rest of your content into your existing site skeleton. If you work off of page templates, take the time to turn one of your functional prototype pages into a template, and then work from there.

The Last Word

A prototype is a quick and easy way to test the ideas and assumptions that came together to form your Web site. Once you've settled on your method for gathering and organizing information, and after you've turned your site plans into a clickable model, you'll be able to see what will work for your Web site and what won't—all without sinking a lot of time and effort into building the final product.

Best of all, prototype results stay private. Users will never know about the problems you corrected during the test-driving process. By the time they get to kick your Web site's tires, they'll see only a polished, well-constructed machine that handles like a dream and practically drives itself. **m**

LISA SCHMEISER, senior editor of Macworld.com, goes into exhaustive detail about planning successful Web sites in her book *The Complete Website Upgrade & Maintenance Guide* (Sybex, 1998).

More Info: www.macworld.com/subject/webdesign

Want more tips for creating great Web sites? Go to Macworld.com's subject pages for the latest Web design news, reviews, discussion, and how-tos.

LINK

A Helping Hand

While the entire prototyping process *can* be completed with nothing more high-tech than paper, pens, and a basic HTML editor, there are plenty of software options for people who do their best thinking in front of a computer screen. If you prefer your mouse to a pen, here are three handy prototyping tools that will help you conceptualize and build your site.

SITE-TREE SOFTWARE

If you need a little help organizing your site's content, INSPIRATION 6, by Inspiration Software ($69; 800/877-4292, www.inspiration.com), can help you turn chaos into an orderly and logical site map. Originally developed to teach students how to visually organize ideas, Inspiration offers easy-to-use flowcharting tools for building complex site trees. You can switch between an outline view and a diagram view, add hyperlinks, and even create your own symbols to customize the way you work.

Along with its many site-management tools, ADOBE GOLIVE 5 ($299; 800/833-6687, www.adobe.com) offers some strong prototyping features. GoLive lets you generate a diagram of your site's files and folders (using drag-and-drop arrows to link one page to another) before you ever create a single Web page. Even better, when you're satisfied with your site's structure, GoLive will automatically build templated HTML pages based on your site tree. Another useful feature lets you create placeholder files for sections you haven't yet mapped; this comes in handy if you need to expand your site but haven't begun working on the specifics.

FAST FUNCTIONAL PROTOTYPES

If you use Macromedia's DREAMWEAVER 3 or higher ($299; 800/457-1774, www.macromedia.com) and are ready to build a functional prototype, you'll want to download the Wireframing extension from Macromedia's Exchange (www.macromedia.com/exchange/dreamweaver/). This free extension to Dreamweaver lets you use CSS Layers to quickly mock up basic page layouts—assigning areas for different types of content—and build a working skeleton of your finished Web site. You simply drag objects, such as a basic navigation bar or page title, from the new Wireframing Objects palette and place them on your page.

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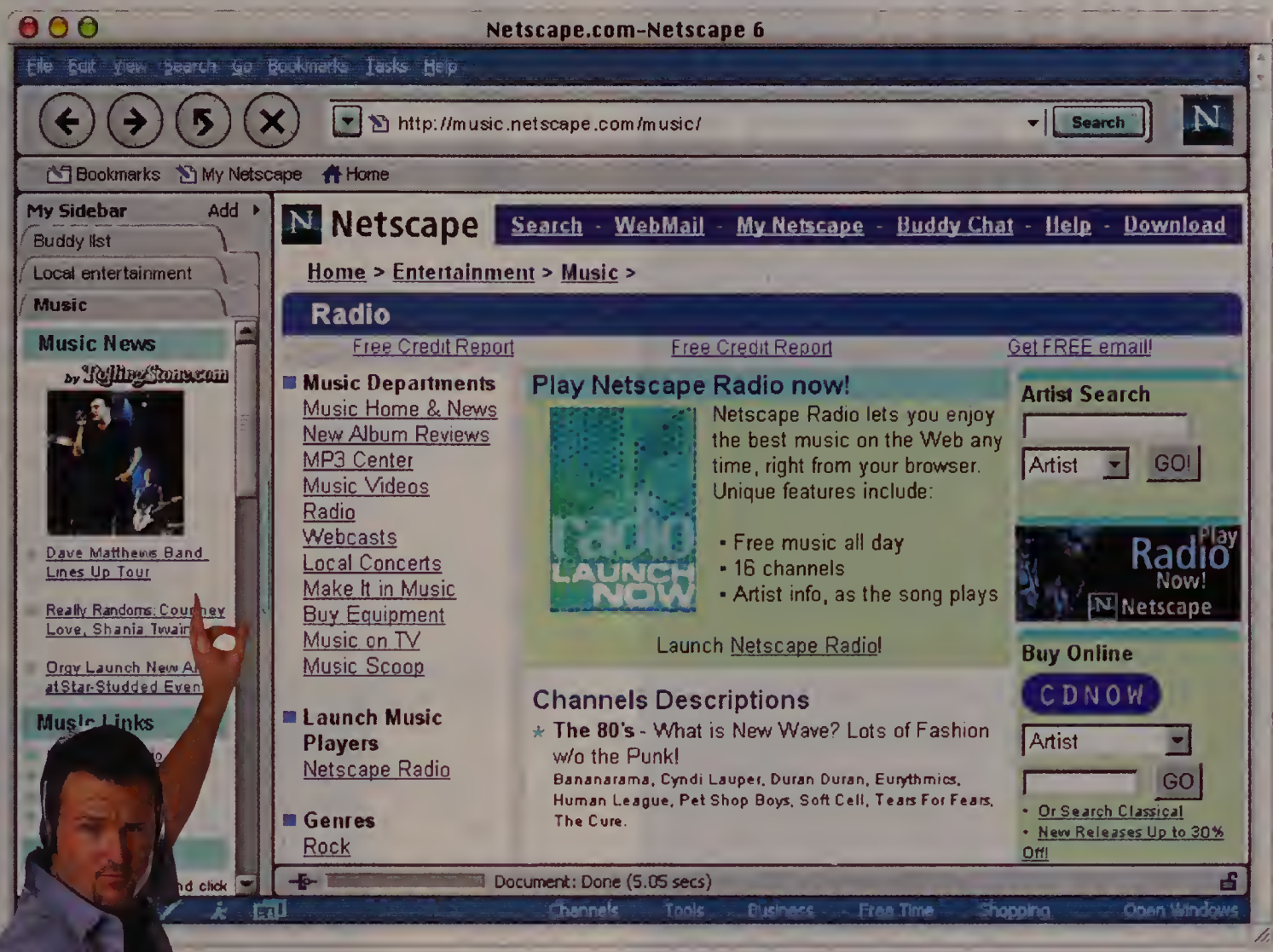

Michael Cunningham is a software developer and a real music lover. He'll find Netscape an ideal way to be more productive online because he can personalize the Internet for the way he works. With new Netscape 6, Michael can keep all of his most important information at his fingertips for fast and easy access. He can stay in touch with coworkers through his buddy list and listen to Netscape Radio during the day for inspiration. At Netscape.com, he can quickly find news and information to help him keep up with what's happening in his field. Other features like search, email and a personalized home page can help Michael streamline his work tasks (so he has more time for concerts). But Netscape is not just for software developers. Try Netscape today and see what it's like to experience the Internet your way.

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The power of the Internet made simple

CHARLES SEITER

Prospect for Gold with Excel

Use Microsoft Excel 2001's Calculator to Predict Stock Prices

There are dozens of ways to analyze stocks to find the best potential investments. But many of the most solid traditional methods have gone out the window in the dizzying dot-com boom and bust. Although you may not be able to tell when investors will tire of waiting for Amazon.com to turn a profit, you can make intelligent guesses about individual stock directions.

One way to predict stock movements is to look for *correlations* between the prices of different stocks. A correlation is a mathematical construct that shows whether stocks move up and down together. If you find a positive correlation, it tends to mean that good news for company A makes the share price of company B go up. This article illustrates the correlation process by tracking two stocks on the same day, but as you'll see in step 5, you can also compare price changes at different times. Although nothing is certain in stocks, knowing what stock A did today may let you predict what stock B will do tomorrow.

A new feature in Excel 2001, the Calculator, makes it easier to create stock-comparison formulas. Formulas are a problem area for many Excel users because it's easy to enter incorrect cell addresses. The Calculator makes formula construction easier: now when you click on a cell, the Calculator notes its address for you. **m**

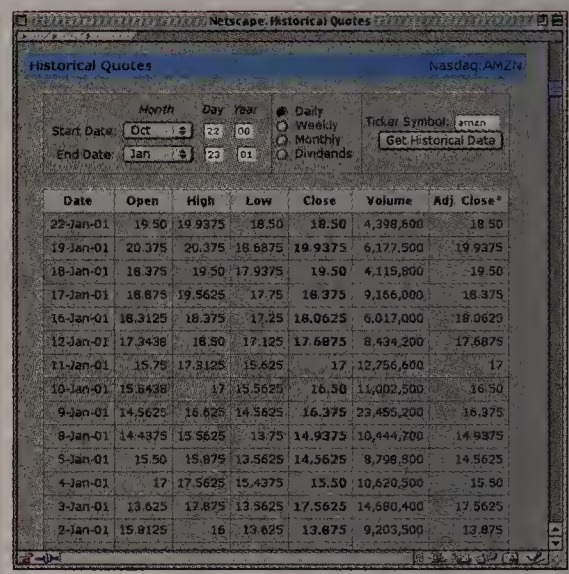
CHARLES SEITER has been writing for *Macworld* for 16 years. He specializes in scientific software and applications of statistics.

1

Get Stock Quotes Online Plenty of excellent Internet services provide stock quotes—every online broker lists them, for example. I used Yahoo Finance because it offers free historical quotes in a format Microsoft Excel can read.

Go to http://finance.yahoo.com and enter a stock symbol, such as AMZN, for Amazon.com (as I did), in the Get Quotes space. Pull down the menu to the right of the Get Quotes button, select Chart, and then click on the Get Quotes button. This brings up a chart of stock quotes. Underneath this chart, click on the Historical Quotes link to bring up a table that shows how the stock has performed over the past three months **A**.

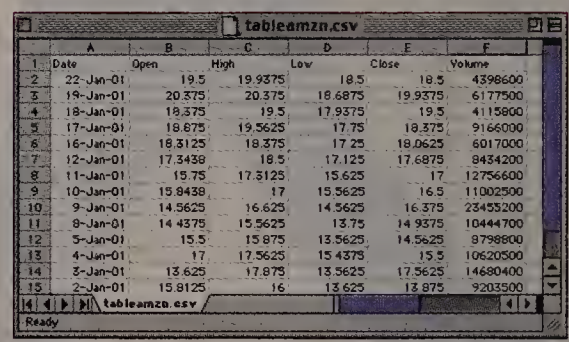
A



Date	Open	High	Low	Close	Volume	Adj Close*
22-Jan-01	19.50	19.9375	18.50	18.50	4,398,600	18.50
19-Jan-01	20.375	20.375	18.6875	19.9375	6,177,500	19.9375
18-Jan-01	18.375	19.50	17.9375	19.50	4,115,800	19.50
17-Jan-01	18.875	19.5625	17.75	18.375	9,166,000	18.375
16-Jan-01	18.3125	18.375	17.25	18.0625	6,017,000	18.0625
12-Jan-01	17.3438	18.50	17.125	17.6875	8,434,200	17.6875
11-Jan-01	15.75	17.3125	15.625	17	12,756,600	17
10-Jan-01	15.8438	17	15.5625	16.50	11,002,500	16.50
9-Jan-01	14.5625	16.625	14.5625	16.375	23,455,200	16.375
8-Jan-01	14.4375	15.5625	13.75	14.9375	10,444,700	14.9375
5-Jan-01	15.50	15.875	13.5625	14.5625	8,798,800	14.5625
4-Jan-01	17	17.5625	15.4375	15.50	10,620,500	15.50
3-Jan-01	13.625	17.875	13.5625	17.5625	14,680,400	17.5625
2-Jan-01	15.8125	16	13.625	13.875	9,203,500	13.875

Choose the Download Spreadsheet Format link, which is below the table, and save the resulting CSV file. Open the file in Excel 2001, as I've done here **B**, *so you can begin working with it.*

B



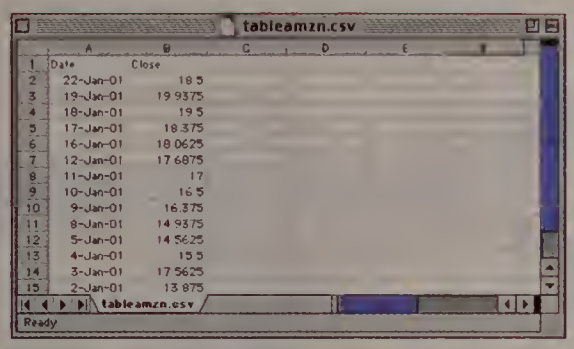
	A	B	C	D	E	F
1	Date	Open	High	Low	Close	Volume
2	22-Jan-01	19.5	19.9375	18.5	18.5	4398600
3	19-Jan-01	20.375	20.375	18.6875	19.9375	6177500
4	18-Jan-01	18.375	19.5	17.9375	19.5	4115800
5	17-Jan-01	18.875	19.5625	17.75	18.375	9166000
6	16-Jan-01	18.3125	18.375	17.25	18.0625	6017000
7	12-Jan-01	17.3438	18.5	17.125	17.6875	8434200
8	11-Jan-01	15.75	17.3125	15.625	17	12756600
9	10-Jan-01	15.8438	17	15.5625	16.5	11002500
10	9-Jan-01	14.5625	16.625	14.5625	16.375	23455200
11	8-Jan-01	14.4375	15.5625	13.75	14.9375	10444700
12	5-Jan-01	15.5	15.875	13.5625	14.5625	8798800
13	4-Jan-01	17	17.5625	15.4375	15.5	10620500
14	3-Jan-01	13.625	17.875	13.5625	17.5625	14680400
15	2-Jan-01	15.8125	16	13.625	13.875	9203500

2

Add a Second Set of Quotes Next you need to get a set of quotes for another stock and put it next to the first set.

Simplify the historical data by deleting everything but the Date and Close columns in the worksheet **A**.

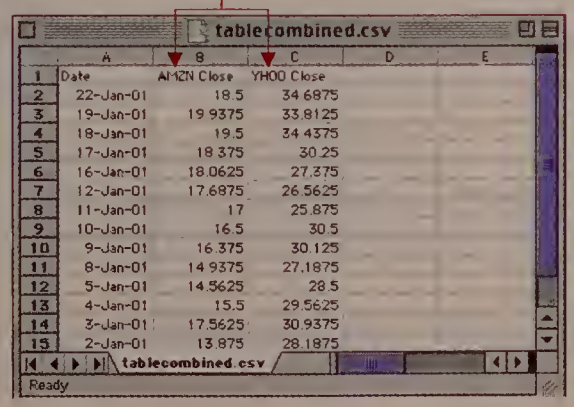
A



Now follow the procedures in step 1 to download quotes for a second stock, such as Yahoo (YHOO). Put those values in another worksheet. Because you've downloaded the stock tables on the same day, their Date columns will match. Therefore, copy only your second stock's Close column, and paste it next to the set of values in the first worksheet.

You might want to label the Close columns with their stock-ticker symbols to avoid confusion **B**. *This gives you a worksheet with closing prices for the same days lined up, so you can calculate whether the stocks' day-to-day price changes are correlated.*

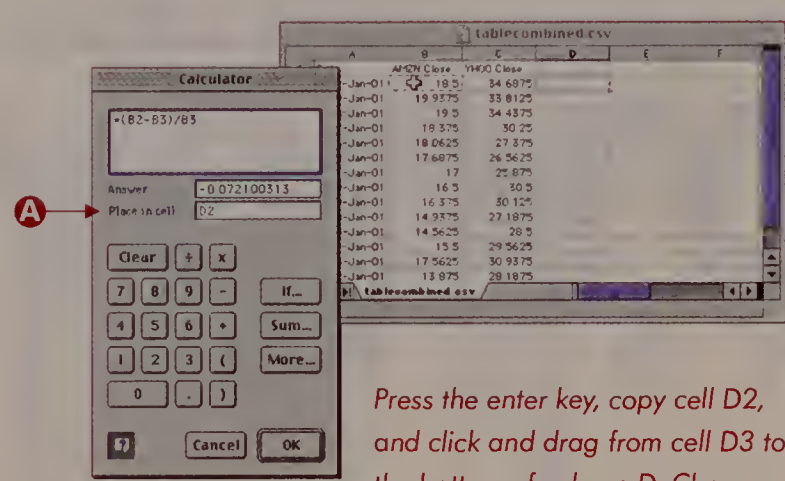
B



3

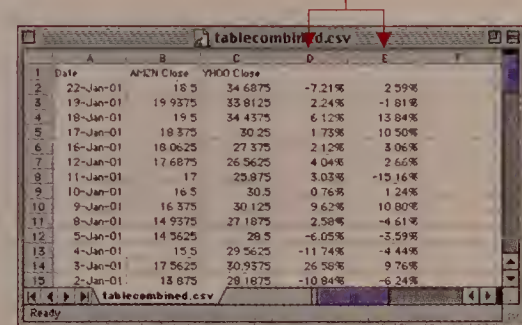
Calculate Percent Change Use the Calculator to convert the columns of closing prices to corresponding columns of day-to-day percent changes in prices.

Click on cell D2, and call up the Calculator (Tools: Calculator). Enter the formula for Amazon.com's column: (today's price – the previous day's price)/the previous day's price. Click on the opening parenthesis in the Calculator keypad and then on cell B2 (today's price) in the spreadsheet. You'll see the cell name appear in the Calculator window **A**. *Click on the Calculator's minus sign, then on cell B3 (the previous day's price), the Calculator's closing parenthesis, and the Calculator's division sign. Click on B3 again. The entire formula in the Calculator window should read* **=(B2–B3)/B3**. *Click on the Calculator's OK button.*



Press the enter key, copy cell D2, and click and drag from cell D3 to the bottom of column D. Choose Paste (⌘-V). Format the values as percentages by selecting the column, going to Format: Cells, and choosing Percentage from the list that appears. Now do the same for column C, **=(C2-C3)/C3**, *pasting into column E. You'll have two columns reporting percent changes* **B**.

B

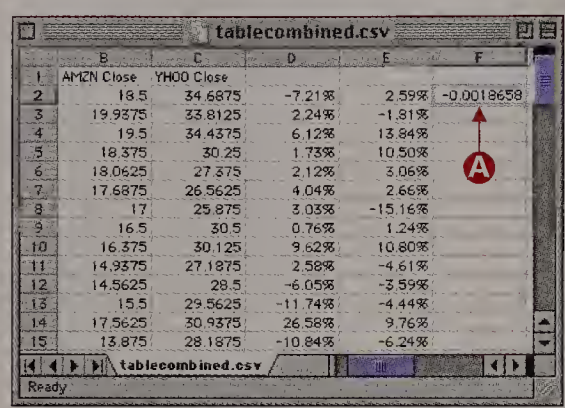


continues

4

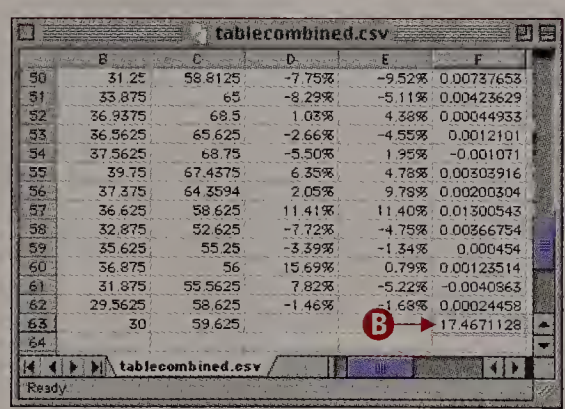
Find the Correlation To find the correlation between the stocks' price movements, multiply each day's changes for the two stocks, and then add these products for all the days.

*For the first date, use the Calculator to multiply the percent difference in the two columns and place the result, **=D2*E2**, in cell F2 Ⓐ.*



	B	C	D	E	F
1	AMZN Close	YHOO Close			
2	18.5	34.6875	-7.21%	2.59%	-0.0018658
3	19.9375	33.8125	2.24%	-1.81%	
4	19.5	34.4375	6.12%	13.84%	
5	18.375	30.25	1.73%	10.50%	
6	18.0625	27.375	2.12%	3.06%	
7	17.6875	26.5625	4.04%	2.66%	
8	17	25.875	3.03%	-15.16%	
9	16.5	30.5	0.76%	1.24%	
10	16.375	30.125	9.62%	10.80%	
11	14.9375	27.1875	2.58%	-4.61%	
12	14.5625	28.5	-6.05%	-3.59%	
13	15.5	29.5625	-11.74%	-4.44%	
14	17.5625	30.9375	26.58%	9.76%	
15	13.875	28.1875	-10.84%	-6.24%	

Copy that formula down the column. Sum column F and multiply by 100 to simplify the number Ⓑ.



	B	C	D	E	F
50	31.25	58.8125	-7.75%	-9.52%	0.00737653
51	33.875	65	-8.29%	-5.11%	0.00423629
52	36.9375	68.5	1.03%	4.38%	0.00044933
53	36.5625	65.625	-2.66%	-4.55%	0.0012101
54	37.5625	68.75	-5.50%	1.95%	-0.001071
55	39.75	67.4375	6.35%	4.78%	0.00303916
56	37.375	64.3594	2.05%	9.78%	0.00200304
57	36.625	58.625	11.41%	11.40%	0.01300543
58	32.875	52.625	-7.72%	-4.75%	0.00366754
59	35.625	55.25	-3.39%	-1.34%	0.000454
60	36.875	56	15.69%	0.79%	0.00123514
61	31.875	55.5625	7.82%	-5.22%	-0.0040363
62	29.5625	58.625	-1.46%	-1.68%	0.00024458
63	30	59.625			17.4671128
64					

The result tells whether the price changes are correlated. If the result is near zero, there's no connection between price movements. If the result is positive, as it is in this case, the two prices tend to move together. If the result is negative, the stock prices tend to move in opposite directions.

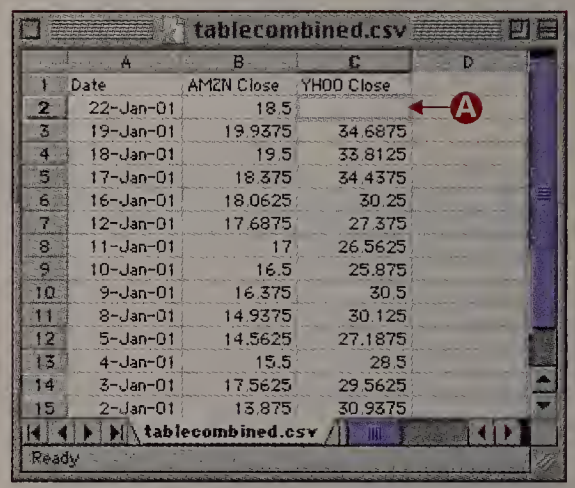
Amazon.com and Yahoo are very different businesses, but they show some positive correlation—probably because investors see them both simply as "Internet stocks."

5

Prediction in Time To make predictions, calculate the correlation between the price of your first stock at one date and the price of your second stock at an earlier date.

To look for predictive values, offset one column by its date.

Move one column of closing prices down one row (Insert: Cells: Shift Cells Down) Ⓐ. Now the stock prices that are next to each other refer to different days.



	A	B	C	D
1	Date	AMZN Close	YHOO Close	
2	22-Jan-01	18.5		
3	19-Jan-01	19.9375	34.6875	
4	18-Jan-01	19.5	33.8125	
5	17-Jan-01	18.375	34.4375	
6	16-Jan-01	18.0625	30.25	
7	12-Jan-01	17.6875	27.375	
8	11-Jan-01	17	26.5625	
9	10-Jan-01	16.5	25.875	
10	9-Jan-01	16.375	30.5	
11	8-Jan-01	14.9375	30.125	
12	5-Jan-01	14.5625	27.1875	
13	4-Jan-01	15.5	28.5	
14	3-Jan-01	17.5625	29.5625	
15	2-Jan-01	13.875	30.9375	

Following the procedures outlined in steps 3 and 4, I found the correlation between Monday's price change in Yahoo's stock and Friday's price change in Amazon.com's stock. Now any correlation is a prediction of tomorrow's change in Yahoo, based on today's change in Amazon.com. A positive correlation means that if AMZN goes up one day, YHOO will tend to go up the next. You can use this procedure to look for weekly or monthly correlation, too. Those data downloads are also available on Yahoo Finance when you click on the Historical Quotes link.

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TERRI STONE

Reveal Your Ideal Image

Fine-tune Layer Masks in Adobe Photoshop

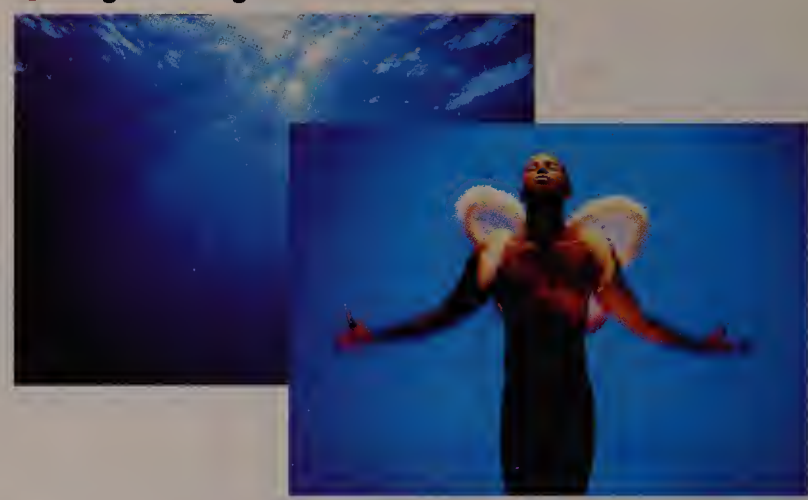
The ability to take several images and blend them into one seamless piece of art is a core strength of Adobe Photoshop (800/833-6687, www.adobe.com). The secret to achieving a flawless blend lies in the flexibility and power of Photoshop's layer masks, which allow you to make parts of a layer fully or partially transparent, selectively revealing the layers beneath.

Using layer masks is simple—*if* your graphics contain clean, high-contrast edges. Alas, most images aren't that considerate. Take the artwork to the far right, for example. The original image—a man with wings set against a blue background—contains semi-transparent areas as well as blurred and faint edges, making the winged figure a nightmare to select. If you ignored the transparencies and blurred edges, the resulting selection wouldn't blend gracefully into the target background of sun-streaked water.

Macworld Design Associate Amy Conger solved the problem by combining several blending methods on her layer mask, thereby creating multiple levels of opacity. (In a layer mask, opacity is represented by shades of gray: black is totally opaque and white is totally transparent.) The end result is a seamless blend of two images. **m**

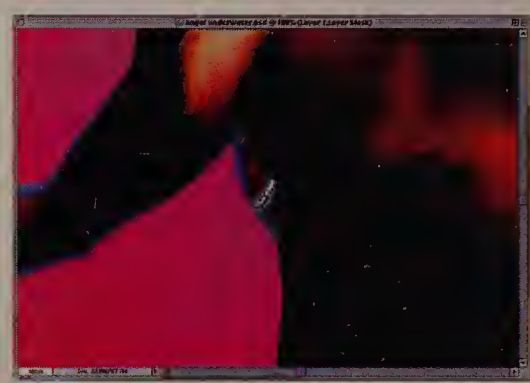
TERRI STONE is the senior editor of *Macworld's How-to* section.

A Original Images



B

Make a Rough Layer Mask Amy first placed the images **A** into separate layers (with the angel image on top). To quickly select the angel's unwanted background, she set the magic-wand tool's tolerance to 36; to prevent selection of blue pixels inside the figure, she selected the Contiguous option. She then shift-clicked on the areas around the figure and turned the selection into a layer mask **B** (Layer: Add Layer Masks).



Clean Up the Edges The initial layer mask covered too much of the angel in some places and too little in others, so Amy used the paintbrush tool to clean up the mask's edges. She made the image and the mask (represented by the red areas) visible at the same time so refining the edges accurately would be easier. Where the mask needed adjustment, Amy painted with white to remove excess masking and with black to enlarge the mask.

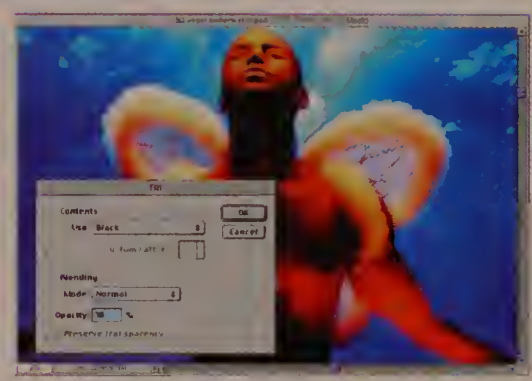
SUNLIGHT IN THE WATER © 2001, CORBIS CORPORATION/NORBERT WU; MAN WITH WINGS © 2001, CORBIS CORPORATION/JOSE L. PELAEZ

Final Image

Final Layer Mask

Blur the Edges While the edges of the original images aren't sharp, they aren't uniformly blurry, either. To preserve these subtle variations in focus, Amy blurred the mask's edges manually with the Blur tool. (She didn't use the Blur filter because it would have affected the entire mask equally.) Amy set the Blur tool to a soft-edged brush and used pressures ranging from 50 to 100 percent.

Smudge the Edges To preserve the illusion of motion around the figure's hands, Amy used the Smudge tool to manipulate the mask's transparency. The Smudge tool pushes at pixels much as your finger smears charcoal on paper, spreading the edges and lightening them as you go. She set the pressure to 25 percent and selected Normal mode, and then she delicately pushed and pulled the mask's edges to thin out the transparency.



Lighten Translucent Areas Amy wanted the inside of the wings to be translucent so the angel would have a sense of depth. She first switched from the layer mask to the original image. With the magic-wand tool set to a tolerance of 24, Amy selected the inner areas of the wings. She then returned to the layer mask and filled the selection with a light gray to add semitransparency.

PRESENTS

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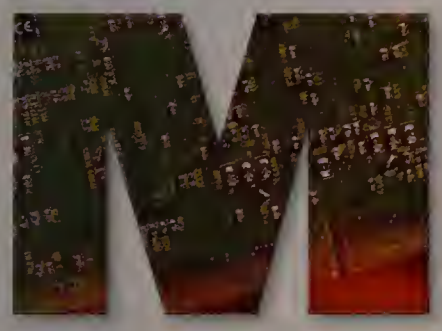
Christopher Breen

Mac 911



May. It's the time of year for morris dancing; for maypole prancing; and for the proletariat to rise up, throw off its shackles, and cause the blood of the imperialist oppressors to run in the—er, uh, no, strike that. In the context of this column, May is more appropriately the month for addressing questions of remote access, printer adapters, and alternate keyboard commands.

Remote Access Alternative

Debbie Wilson writes that she'd like to gain admittance via modem to her work Mac from her home Mac, using something other than Apple's Remote Access. While I celebrate Comrade Wilson's desire—as I celebrate the desires of all my working brothers and sisters—to skirt the software built into an operating system devised and deployed by capitalist jackals, I have to pause and wonder which aspects of Remote Access do not meet Ms. Wilson's needs.

After all, with the release of OS 9, Apple generously included a feature in Remote Access that the working classes at one time had to pay for: the ability to access files on another Mac remotely via modem or the Internet. To activate this feature on her work Mac, Debbie need only open the File Sharing control panel, start file sharing, click on the Users & Groups tab, double-click on the name she uses to access the Mac across the network, select Remote Access from the Show pop-up menu, and select the Allow User To Dial In To This Computer option. On her Mac at home she would select Remote Only in the AppleTalk control panel's Connect Via pop-up menu; choose PPP in the TCP/IP Connect Via pop-up menu; open the Remote Access control panel; enter her user name, her password, and the phone number of the modem attached to the work Mac; and initiate a connection. Once she's made a connection, all that remains is to select the work Mac from within the Chooser.

Of course, if your work Mac—like nearly every office Mac—reaches the Web through a network rather than a modem, you have to connect via TCP. Because you may encounter changing IP addresses if the network accesses the Web via DHCP (Dynamic Host Configuration Protocol—an Internet protocol that can automate the assignment of IP addresses), it's time for the IT folks at your place of work to earn their keep: give them a call and ask how to access the network remotely.

But I can understand why Debbie might be frustrated by Remote Access's limitations: it doesn't allow you to remotely control the actions of your work Mac. No, for that kind of control you need Netopia's Timbuktu Pro (510/814-5000, www.netopia.com). For $80, the Timbuktu Pro 5.X for Mac OS twin pack allows you to copy files to and from the remote Mac, actually see that Mac's screen on your monitor, and control its actions (see "Total Control"). That's right; although you'll experience glacial performance, you're welcome to remotely play a game of Cro-Mag Rally on your work computer (or, better yet, see if someone else is playing Cro-Mag Rally on it while you're away from the office). With the latest version of Timbuktu Pro you can even send your voice over the Internet.

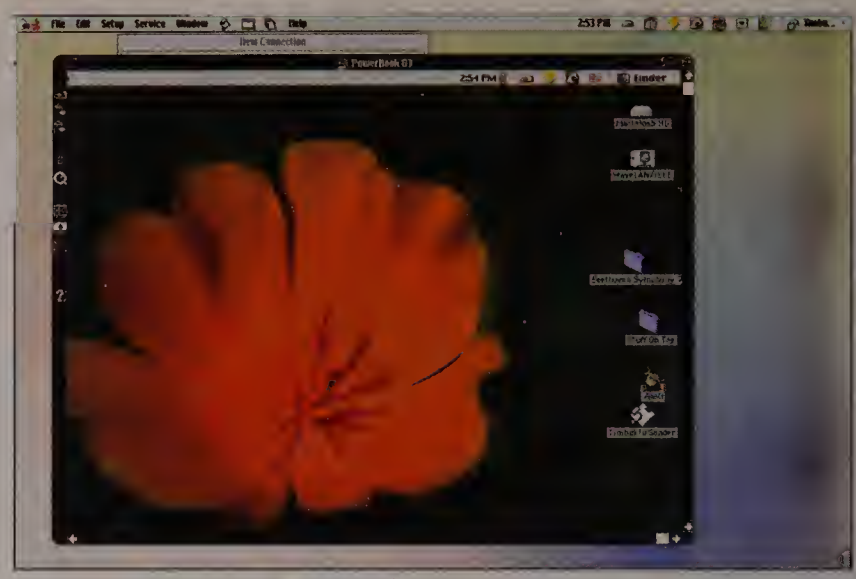
continues

New Mac to Old Printer

Like a rosy-cheeked child circling a maypole, reader Jim Stephens has gone round and round with his iMac DV and Personal LaserWriter LS. Jim purchased a Xircom USB to Serial Converter (805/376-9300, www.xircom.com), connected his iMac and printer via the connector, and when attempting to print, received an error message that contained this phrase: "Please check the Peripheral 8 cable connections, then try printing again."

Although this error message hints at the problem, one more to the point might read, "Jim, it's unfortunate that the system requirements for the Xircom device aren't posted in a more obvious place or that you didn't read Christopher Breen's 'Bridge the Gap' feature in the June 2000 issue of *Macworld*. For if you had, this ugly little episode could have been avoided." Avoided how? In the first place, digging through the Xircom site reveals that this adapter is not compatible with Apple LaserWriter printers. The packaging might not have stated this as clearly as the Web site does, but it's worth noting that USB-to-serial adapters can be tricky in this regard. Always check hardware compatibility before purchasing such an adapter.

You would be better served by the solution I mentioned in "Bridge the Gap": an Ethernet-to-LocalTalk adapter. Both Asanté (408/435-8388, www.asante.com) and Farallon (510/346-8001, www.farallon.com) offer such devices. Asanté's AsantéTalk and Farallon's EtherMac iPrint LT adapters allow you to connect an Ethernet-enabled Mac to a LocalTalk printer for about a hundred bucks. Farallon also offers a serial-only version—the EtherMac iPrint SL, which works with Apple StyleWriter printers—for just over $80.



Total Control Timbuktu Pro is your window to the world of a remotely controlled Mac, and that's handy for troubleshooting.

Working in a Different Key

Mac 911 Forum visitor Richard Troxel, like many who have progressed through the Microsoft Office opus, is disappointed that many familiar keyboard commands have changed in Office 2001. For example, in older versions of Excel, pressing the enter key moved the cursor down within the current cell, and pressing the return key moved the cursor down to the next cell. Now pressing either key moves the cursor down to the next cell.

Richard, while I could suggest that you learn to press control-enter when you want to keep your cursor in the current Excel cell, I do sympathize—Microsoft should make Excel keyboard commands customizable. But until it does, I suggest that you look into a macro utility such as CE Software's QuicKeys 5.0 ($90; 515/221-1801, www.cesoft.com). With QuicKeys, you can easily create a keyboard-alias macro that moves the cursor down within a cell when you press the enter key. And you can extend this keyboard-alias capability to any application on your Mac. (Because I'm occasionally clumsy, I've created a keyboard alias that substitutes the F14 key—assigned to absolutely nothing—for the help key, which I routinely hit by accident when reaching for the delete key.) **m**

Contributing Editor CHRISTOPHER BREEN is not now—and has never been—a member of the Communist Party.

Tip of the Month

Your Mac can greet you with a weather report or the local news when you wake up. Just drag the URL of your favorite weather or news site from the address bar of your Web browser to the desktop to create a Web clipping; place that file in the Startup Items folder in the System Folder.

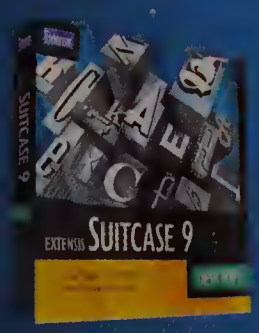
Now open the Energy Saver control panel, click on the Schedule button, and create a schedule that starts your Mac before you get up in the morning. When you rise the next day, you'll be greeted by a Web page offering the latest news or weather.

Jon Fowler
Saratoga Springs, New York

Share tips and discuss Mac problems with other Mac users in the Mac 911 Forum (www.macworld.com/subject/mac911). Also send tips by e-mail to mac911@macworld.com. We pay $50 for tips selected for publication in *Macworld*. All published submissions become the sole property of *Macworld*.

Shareware and freeware mentioned in *Mac 911* are available from ZDNet's Macdownload.com (www.macdownload.com).

how do YOU find the right font?



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Adobe Premiere 6

Venerable Video Editor Gains DV Support and Interface Enhancements

ADOBE PREMIERE 6

Rating: ♦♦♦♦

Pros: Excellent DV and Web support; numerous interface improvements; supports After Effects plug-ins.

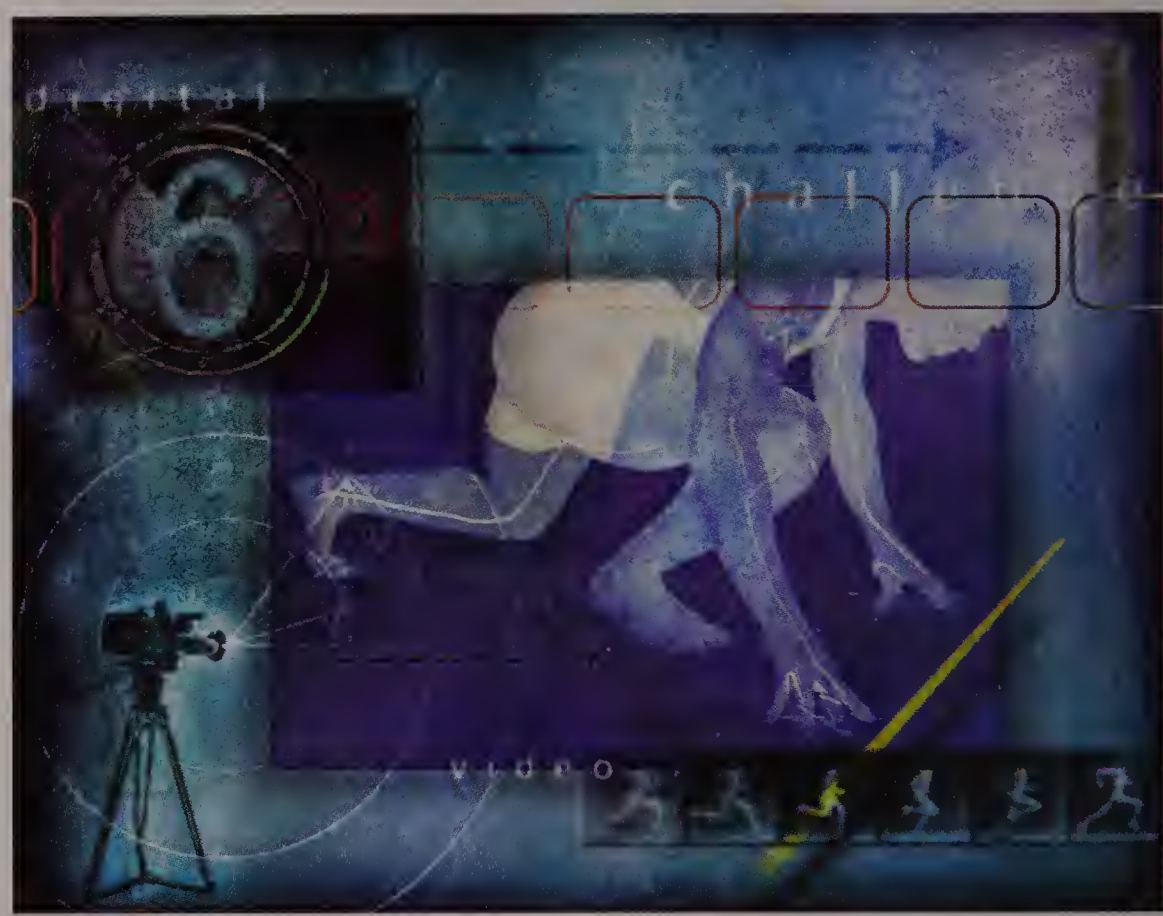
Cons: Some minor bugs and interface flaws; currently no support for analog capture cards.

Company's estimated price: $549; upgrade, $149

Company: Adobe Systems, *888/724-4507*, **www.adobe.com**

MACWORLD'S BUYING ADVICE:

With version 6, Premiere is back in the game. Although the new version still lacks the interface elegance and special-effects prowess of Final Cut Pro, its learning curve isn't as onerous, its price isn't as steep, and its DV and Web support are outstanding. Adobe has also thrown in some goodies, including Photoshop LE and Sonic Desktop Software's SmartSound, which lets you create custom-length music soundtracks. Premiere 6 still has some minor rough spots, but it's improved enough to deserve a close look by anyone editing video on the Mac.



ALICIA BUELOW

Adobe Premiere has been around almost as long as QuickTime itself, and until recently it was the video-editing program of choice for the Mac. All that changed when Apple released Final Cut Pro and Adobe released Premiere 5: the former combined high-end features with an elegant interface, and the latter was finicky and sluggish. Apple's masterstroke left Premiere on the cutting-room floor.

With version 6, Premiere has made a comeback. Premiere 6 brings improvements and new features in nearly every area, from video and audio editing, to effects controls, to DV and Web support. This new version is also faster and more reliable than its predecessor.

Premiere Does Digital

Premiere 5's support for FireWire-based DV devices was somewhere between bad and rotten. Adobe built Premiere 6 with DV in mind, including drivers that enable the program to control dozens of popular DV camcorders and decks with single-frame accuracy.

Indeed, Premiere 6 is DV-centric to a fault: as we went to press, the program didn't support any analog capture cards. Third-party developers may rework their drivers for Premiere 6, but the digital handwriting is on the wall: it's time to go DV.

A revamped batch-capture feature makes it easy to snare scenes: as a DV tape plays back, you click on buttons or press keyboard sequences

to mark the scenes you want to capture. Click on a button in the Batch Capture window, and Premiere controls your DV device and imports the scenes. Batch capturing worked well in my tests, but you should heed Adobe's advice to avoid gaps in a DV tape's time code. When I tried capturing clips from a tape containing gaps, Premiere got seriously confused and crashed—after repeatedly fast-forwarding and rewinding in a futile attempt to find its place.

Like Final Cut Pro and iMovie 2, Premiere 6 can display clips and previews on a connected DV device, letting you view your work-in-progress at full resolution on a camcorder's LCD screen or, better yet, on a TV monitor connected to the camcorder.

Editing Enhancements

Several interface enhancements and new features make Premiere more approachable for video newcomers and help speed production for seasoned editors. To flesh out the structure of a scene, you can arrange clips in the new Storyboard window. When you've finished, choose the Automate To Timeline command, and Premiere adds the clips to the timeline, even inserting transitions between them if you like. And if you've set the bookmark-like markers in the Timeline window, Premiere will time the cuts to match the markers. It's a great way to rough out a scene.

And these markers are much more than bookmarks: you can assign Web addresses to them, and when you export your video, Premiere embeds them in your movie. A viewer's Web browser will go to those addresses as the movie plays. Media 100's Cinestream 3, which began shipping in March, also has this feature; Final Cut Pro lacks it.

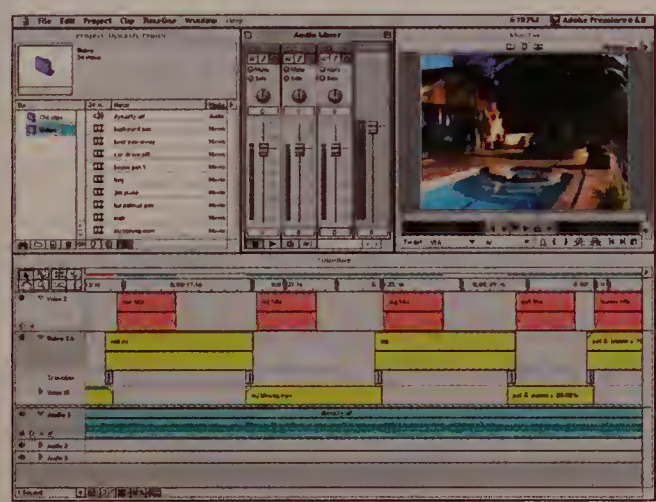
Also on the Web front, Premiere 6 includes Media 100's Cleaner 5 EZ, a scaled-down version of the incomparable compression utility. A new Save For Web command launches Cleaner 5 EZ, which then compresses the current project. Premiere 6 also includes a plug-in that provides advanced export options for compressing in RealNetworks' RealSystem format.

As for audio, Premiere 6 adds an Audio Mixer window, which displays an on-screen mixer with sliders and knobs that let you adjust audio levels and left-right stereo panning. With the mixer's automation features, you can record volume and pan adjustments as you make them.

Other Premiere 6 enhancements fall into the spit-and-polish category. The Monitor window, which displays your work in progress, has a new look. The Timeline window contains some new buttons and adds keyframe tracks, used when animating an effect over time. And the convenient new Settings Viewer displays summaries of your capture, project, and export settings, making it easy to spot conflicts.

Edit Your Way

Premiere 6 provides far more customizing options than did earlier versions. For starters, you can switch the Timeline window between single-track and A/B editing modes. In single-track mode, clips and transitions appear in a single video track, as they do in Final Cut Pro and high-end editing systems. In A/B mode, the Timeline window works much as it did in earlier Premiere versions, with a separate transitions track sandwiched between two primary video tracks. The A/B mode is easier for inexperienced video editors; Premiere is unique in offering both editing options.



Sound Stage Using Premiere 6's Audio Mixer window (top center), you can mix a soundtrack on-the-fly.

Like other members of the Adobe family, Premiere 6 lets you save and recall window arrangements—handy for optimizing your workspace for specific tasks. And like Adobe Photoshop, Premiere 6 has a History palette that lets you undo and redo recent actions. Unlike Photoshop, however, Premiere 6 doesn't let you automate repetitive tasks.

Premiere 6's Commands palette lets you assign keyboard shortcuts and create buttons for common commands. But a weird bug sometimes causes Premiere's palettes to disappear when you create a custom command, requiring a trip to the Window menu to bring them back.

More Effective

Premiere 6's special-effects features are significantly improved. The program can now use Adobe After Effects plug-ins, and it includes more than 25 After Effects filters. For example, the Transform family of filters lets you create pan-zoom-rotate effects, and with Drop Shadow, you can add shadows behind clips.

A new Effects Controls palette works identically to its counterpart in After Effects. You can set keyframes in the Timeline window and then use Effects Controls to define an effect's changes over time.

Adobe doesn't support the use of After Effects filters not included with Premiere. I spot-checked several third-party After Effects plug-ins, however, and although rendering was slow, the plug-ins worked.—JIM HEID

Broadband Routers

Affordable Devices Provide Easy Internet Sharing and Network Security

MACWORLD'S BUYING ADVICE:

If you want to prepare for the day your network grows beyond the two or three machines you now have, the Ugate-3200P, from MaxGate, is the best choice. With seven ports, as well as an uplink port for adding more hubs and a print server, this router has the most flexibility. Setup is easy, and the free year of Dynamic DNS service is a bonus. For smaller networks, you may want to take a look at Linksys's EtherFast (*Reviews*, August 2000). If you already have a small network with an Ethernet hub, the NetLine Broadband Gateway, from Farallon, is a fine choice.

From left: the MaxGate Ugate-3200P, the Farallon NetLine Broadband Gateway, the SMC Barricade, and the Netgear RT314

GIBSON

Thanks to a new breed of inexpensive, easy-to-use routers, people with small networks in their homes or offices can share DSL or cable connections and boost security at the same time. These routers are simple to set up using your Web browser, and they'll have your Macs (or PCs) working together in no time.

We looked at Farallon's NetLine Broadband Gateway, MaxGate's Ugate-3200P, Netgear's RT314, and SMC's Barricade. We found that the Ugate-3200P had the most to offer, and that the others still can't compare with the EtherFast, from Linksys (*Reviews*, August 2000)—it's our second choice.

Just about any router that uses Ethernet and can be configured in a Web browser will work with a Mac. Many routers have Windows-centric documentation, but if you can decipher setup instructions from pictures of a Windows Web browser, you'll be fine.

Setting Up Shop

We tested each router with a sage iMac DV, a Power Mac G4, and a DSL connection, using a static IP address. We configured the routers using Microsoft Internet Explorer 5.0 (Netscape Navigator 4 or Internet Explorer 4 or newer are recommended). The NetLine Broadband Gateway was by far the easiest to set up, thanks to its well-written, clearly labeled setup card.

The RT314 featured a Web-based setup wizard, but instructions included in the box made no mention of the Mac. The wizard, which uses your answers to a series of questions to configure the router,

Macworld LAB TEST

spares you having to tinker with expert settings such as the DHCP-server IP-address range and the number of nodes—for example, computers or printers connected to the network. (The RT314 has a 32-node limit, while the others allow 252.) You can opt to configure this router using Telnet, circumventing the wizard, but doing so is awkward and time-consuming.

Setting up the Barricade was problematic. It ships with instructions on a CD-ROM that isn't Mac-compatible. We managed to find the Read Me file and use it to get started, but a hybrid-format CD could have saved a lot of extra time and effort.

The Ugate-3200P, housed in a slick, thin, metallic case, is as pleasant to set up as it is to look at. It features a step-by-step Web-based setup with specific instructions for Mac users. For most routers, your TCP/IP control panel should be set for DHCP, but the directions for our unit suggested first setting up the Mac manually (the company plans to rewrite these directions to describe the DHCP setup instead). The Ugate-3200P also comes with a service called Dynamic DNS, which lets users without static IP addresses host servers using a DHCP connection. The router handles the changing IP addresses so that you can always reach your machine over the Internet—a handy feature if you want access from afar. The service is free for the first year; after that, it costs $25 per year. The Ugate-3200P also includes a print server, which theoretically allows you to share certain parallel-port printers across a network of Macs. However, this feature was not implemented in time for us to test it.

Ports of Call

The four routers we looked at feature both 10BaseT and 100BaseT bandwidth, with auto-sensing capabilities so they can choose between the two as needed. Each also has a Wide Area Network (WAN) port for your cable or DSL modem. They differ primarily in the number of Ethernet ports. The RT314 and the Barricade have four ports. (The Barricade also comes in an eight-port configuration that costs $186.)

The NetLine Broadband Gateway has only one Ethernet port, so you'll need an additional hub to use it with more than one machine. And its WAN port is limited to 10BaseT. A router such as this is useful only if you already have a network and you just want to add a DHCP server and DSL-sharing capabilities. (The Netline Broadband Gateway's small footprint makes it easy to add to an existing network.)

The Ugate-3200P features more ports than most home users will know what to do with: seven Ethernet ports as well as an uplink port (used to connect additional hubs and switches).

From an industrial-design perspective, all of the routers were straightforward and functional, except for the Barricade. Its power cord frequently fell out of the router, and a light on top blinked amber as though something were wrong, but that is its way of saying that everything is OK.

Perks

One of the most important benefits of adding a router to your DSL or cable-modem connection is the enhanced security from Network Address Translation (NAT). Using NAT, the router assigns computers behind it IP addresses that users on the Internet can't detect.

And each of the four routers we looked at offers the convenience of PPPoE (PPP over Ethernet). During setup, you enter the log-in information provided by your ISP, and thereafter the router will connect whenever a computer on the network makes a request.—BRETT LARSON

Broadband Routers Compared

COMPANY	PRODUCT	MOUSE RATING	COMPANY'S ESTIMATED PRICE	CONTACT	PORTS	PROS	CONS
Farallan	NetLine Broadband Gateway	🖱🖱🖱½	$169	510/346-8001, www.farallan.com	1 Ethernet, 1 WAN	Small footprint; easy to set up; supports PPPoE.	Expensive for a single-port device.
MaxGate	Ugate-3200P	🖱🖱🖱🖱	$199	800/284-8985, www.maxgate.net	7 Ethernet, 1 uplink, 1 WAN	Easy to set up; supports PPPoE; excellent price for large router; free year of Dynamic DNS service; nice design.	A bit pricey.
Netgear	RT314	🖱🖱🖱	$150	888/638-4327, www.netgear.com	4 Ethernet, 1 WAN	Easy to set up; inexpensive; supports PPPoE.	Large footprint; setup wizard may be limiting for some users.
SMC	Barricade	🖱🖱	$132	888/838-9247, www.smc.com	4 Ethernet, 1 WAN	Supports PPPoE; inexpensive.	Difficult to set up; has a few industrial-design flaws.

Wireless PC Card Modems

Road-Warrior Modems Provide Wireless Access with Mixed Results

MACWORLD'S BUYING ADVICE:

If you need wireless Web access enough to pay hefty monthly fees, the hands-down best wireless PC Card modem is Novatel's Merlin for Ricochet. It's easy to install and lives up to its high-speed billing. The catch is Ricochet's limited coverage area, so check that before you buy. CDPD networks, although much slower than Ricochet, cover a lot more territory. If you need only to get e-mail occasionally and don't want to pay high fees, the Nextcell Spider II will do the job; it was more stable than the Novatel Merlin in our tests.

Clockwise from top: the Novatel Wireless Merlin, the Nextcell Spider II, and the Novatel Wireless Merlin for Ricochet

DAVID PAPAS

For PowerBook owners who suffer from e-mail withdrawal when they travel, it may be time to join the wireless set. Three PC Card modems make this possible: Novatel Wireless's Merlin and Merlin for Ricochet and Nextcell's Spider II let you connect to the Web via cellular data networks. The Merlin for Ricochet offered the best speeds and stability, but Ricochet's coverage areas are limited and its service is expensive.

Speed or Coverage?

It's best to buy any of these cards directly from your service provider, so that it comes to you already activated. (You'll also be assured of competent technical support during installation.)

The Merlin and the Spider II use the Cellular Digital Packet Data (CDPD) network, a 19.2-Kbps protocol offered by telephony providers such as Verizon and AT&T Wireless. Its actual throughput is more like 14.4 Kbps, and though this may seem like Stone Age speed, it's adequate for basic e-mail and viewing the occasional Web page. The Merlin for Ricochet uses the Ricochet service, which offers blazing speeds as fast as 128 Kbps (average speed is about 96 Kbps).

CDPD's coverage is wider than Ricochet's, although neither compares with that of regular cell phones. (For complete maps, see the vendors' Web sites.) And CDPD's basic service is relatively inexpensive: monthly plans vary from $10, for limited access, to about $50, for unlim-

ited regional service. Ricochet costs about $75 per month, depending on the length of the contract.

The Merlin and Spider II modems have subtle advantages and disadvantages. The Spider II has a three-year warranty, compared with one year for Merlin, and its handy, detachable antenna means you don't have to eject it from the PowerBook when it's time to travel. However, the Spider II uses a SLIP connection, requiring you to fill in many more fields during initial setup than the Merlin's PPP connection.

The Merlin for Ricochet is the much faster alternative, but the service is available only in limited areas: currently it's offered in and around 13 cities, including Los Angeles; New York; Minneapolis–St. Paul; and Houston, Texas. The greatest density of coverage is along the East Coast. Metricom plans to extend the service to 33 additional areas. Of the modems we tested, the Merlin for Ricochet was the easiest to install—plug it in, enter data in a few fields, and you're on the Net.

Three for the Road

You can use any of these modems outdoors, indoors (as long as you're not too far away from a window), or even in a moving car. On a recent trip, I used the Merlin to log on to AOL Instant Messenger during the hour-and-a-half drive from Boston's Logan Airport to Manchester, New Hampshire. Since chatting on Instant Messenger takes very little bandwidth, performance wasn't noticeably slower. I even received some e-mail while I was chatting. The Merlin did disconnect a few times (presumably when moving from one cell area to another), but it took less than a minute to reconnect.

I tested the Spider II and Merlin for Ricochet in cars around the San Francisco Bay Area and found that the Spider II's performance was similar to the Merlin's. The Merlin for Ricochet modem card was much faster than either, of course, but it still disconnected and reconnected when moving in and out of cell areas.

As with cell phones, signal strength can vary, even if you don't actually get disconnected. Unlike cell phones, which get faint or noisy, a data signal loses transmission speeds when a data signal is weak. Since CDPD speeds are low to begin with, CDPD can become almost unusable if a signal is weak, timing out when connecting to mail and Web servers. Fortunately, all three modems we tested provide a utility that shows signal strength, so you can move to a location with a better signal (near a window, for example).

Following a couple of tips will ease a lot of frustration with the CDPD cards. First, set your e-mail preferences to receive only the initial 30K or so of large messages. Most messages are smaller, unless they have attachments or HTML formatting. You won't lose larger messages—they will stay on the server till you download them in full. Second, if you surf the Web, turn off settings for pictures, sounds, and animations.

Steady As You Go

All three cards showed a few stability problems. My PowerBook sometimes crashed after waking from Sleep mode or after switching from one modem configuration to another. The Merlin for Ricochet was the most stable in these circumstances. With the two CDPD modems, the most reliable way to connect after switching configurations was to first change all the connection settings and then restart with the modem in the slot. The Merlin regularly crashed the PowerBook or failed to reconnect after Sleep mode. I ended up turning off the Automatic Sleep option while using that modem. Similar problems with the other two models were far less frequent and wouldn't prevent them from being worthwhile tools for the road warrior.

Power Drain

All three cards draw on a PowerBook's battery. The CDPD modems use less power than the Ricochet modem—when you use the Merlin for Ricochet for extended periods, your battery's life can be halved. It pays to invest in an extra battery if you buy one of these cards. After all, what good is wireless Net access if you have to find a power outlet to use it?—BECKY WARING

Wireless Modems Compared

COMPANY	PRODUCT	MOUSE RATING	COMPANY'S ESTIMATED PRICE	CONTACT	PROS	CONS
Nextcell	Spider II (CDPD)	♦♦♦	$329	972/633-4400, www.nextcell.com	Good coverage; performance is adequate for wireless e-mail.	Extensive setup procedure; slightly unstable.
Navatel Wireless	Merlin (CDPD)	♦♦½	$199	888/888-9231, www.novatelwireless.com	Good coverage; performance is adequate for e-mail; inexpensive.	Causes frequent crashes, especially with PowerBook Sleep mode.
	Merlin for Ricochet	♦♦♦½	$299	888/888-9231, www.novatelwireless.com	High-speed wireless access; easy to install and use.	Limited coverage; expensive service; slightly unstable.

Virtual PC 4

Groundbreaking PC Emulator Runs Windows, Linux Simultaneously

VIRTUAL PC 4

Rating: ♦♦♦♦½

Pros: Faster than earlier versions; runs multiple operating systems; better memory management; improved compatibility.

Cons: Less compatible with games; some memory-intensive applications can cause Virtual PC to freeze.

Company's estimated price: $199, with Windows 98 or ME; $249, with Windows 2000; $99, with DOS; $79, upgrade

Company: Connectix, *800/950-5880*, **www.connectix.com**

MACWORLD'S BUYING ADVICE:

Virtual PC 4 isn't quite perfect: it uses a little more RAM than version 3, and it contains minor glitches, such as incompatibility with some DOS games. However, these shortcomings are minor compared with Virtual PC's strengths, including beefed-up performance and the ability to run multiple operating systems simultaneously. Version 4 is by far the best PC emulator ever, and well worth the price of an upgrade.

Anyone who runs PC software on a Mac craves a faster emulator, and the completely rewritten Virtual PC 4, from Connectix, is up to three times as fast as previous versions. Although still not as speedy as a new PC, it's the emulator's most significant and innovative upgrade ever.

More Windows

The most striking new feature of Virtual PC 4 is its ability to simultaneously run multiple copies of Windows 95, 98, ME, NT, and 2000 and Red Hat Linux. When you launch Virtual PC, a window displays the operating systems you have installed and tells you whether they're running; you can change the settings for each OS, launch them, or switch to them.

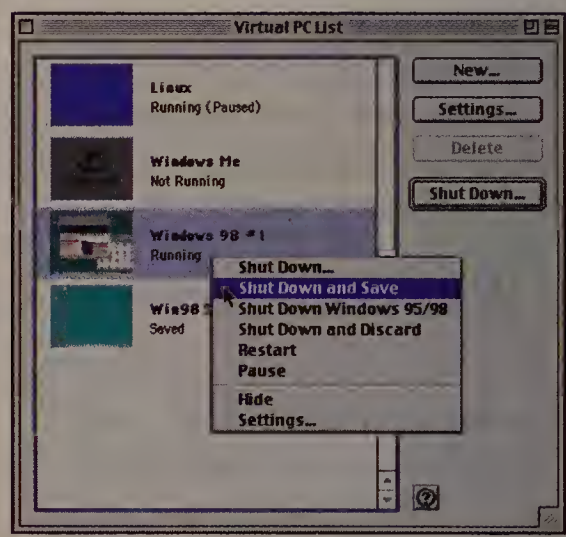
Virtual PC's new memory model quadruples the 128MB RAM limit for Windows or Linux to 512MB per OS. You now set RAM amounts for each OS in its Settings menu rather than in the Get Info box. Virtual PC is unlike most Mac applications in that the maximum RAM allocation grows and shrinks as needed. We ran into trouble with this feature in a 128MB Mac when Windows Media Player asked for too much RAM: Virtual PC took all the available RAM and froze.

Drive images can also be larger than in other emulators—as large as 127GB. And because the C-drive image file takes only as much space as it needs, a 10GB disk image containing 1GB of data takes up only 1GB on your hard drive.

Improved Performance

We used Ziff-Davis Media's WinBench 99 1.2 to test Virtual PC 4 running Windows 98 SE on a 350MHz Power Mac G4 with 384MB of RAM and an AGP slot. Although Virtual PC 4 was slower in a few of the tests than version 3, it was 20 percent to 50 percent faster in most of the tests. It was more than twice as fast as its predecessor in many tests, and more than three times as fast in others. Oddly, Virtual PC 4 ran slightly slower when we increased Windows' RAM allocation from 64MB to 128MB.

Virtual PC 4's compatibility with Windows business software also seems improved; in our tests, it ran some PC software incompatible with Virtual PC 3. It also ran more of the WinBench tests than version 3. But fewer DOS games run under version 4 than under version 3, because Virtual PC no longer supports hardware-accelerated 3-D video.—JOHN RIZZO



Keep Your Systems in Order You can use Virtual PC 4's new List window to manage multiple copies of Windows and Linux.

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Norton Personal Firewall 1.0

Internet-Protection Software for Individual Users Needs Beefing Up

NORTON PERSONAL FIREWALL 1.0

Rating: ♦♦

Pros: Excellent user interface; access-attempt logging and alerts; self-test feature.

Cons: Doesn't work with FTP; doesn't protect against denial-of-service attacks.

Company's estimated price: $49

Company: Symantec, *408/517-8000*, **www.symantec.com**

MACWORLD'S BUYING ADVICE:

Norton Personal Firewall 1.0 offers some great innovations, such as its self-test feature, but it lacks solid basic firewall protection and the ability to work transparently with FTP. Symantec says these problems will be fixed in a future release, which is slated to include a stealth mode that will guard against denial-of-service attacks by making your Mac invisible to outsiders.

Hackers are now targeting individual Internet users and their unprotected home computers for nefarious purposes, such as launching denial-of-service attacks. This makes firewall protection for any computer with a full-time Internet connection—such as DSL—an absolute necessity. It's even a good idea for computers with dial-up modem connections, which are vulnerable while online. Symantec aims to give Mac users that protection with Norton Personal Firewall 1.0. Alas, though the software has some intriguing features, its basic firewall functions need improvement.

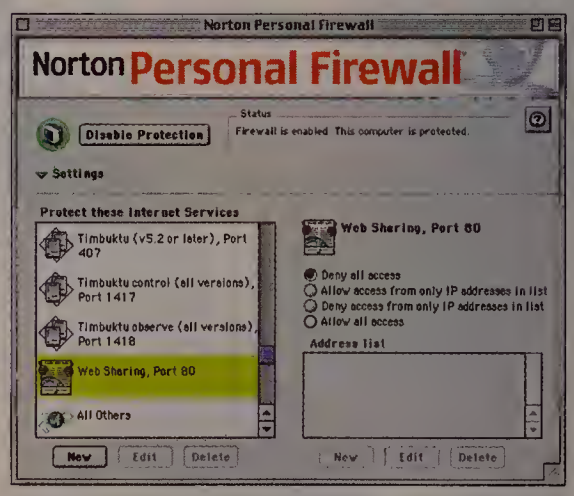
Protection for One

Norton Personal Firewall installs easily and operates unobtrusively in the background, intercepting attempts to access your computer and repelling unauthorized users. The easy-to-use control application lets you turn protection on and off and configure various features. It also warns you at start-up if you've inadvertently left file sharing open via TCP/IP.

You can opt to permit access by outside users, either by service (such as file sharing) or—to extend access only to specific outside users—by IP address. The program logs access attempts; you can choose to have it notify you via a pop-up alert. Clicking on column headings sorts the log file, simplifying log reviews. A convenient test lets you generate packets that simulate an attack to verify that the firewall is working.

These features are all very good, and they would put Norton Personal Firewall at the top of its product class, were it not for some shortcomings in the program's basic firewall mechanism. One problem is that the firewall itself admits certain kinds of harmful traffic—such as denial-of-service attacks—making the product nearly useless as a deterrent to serious hackers.

During testing, Norton Personal Firewall cheerfully let pass forged IP packets crafted to attack innocent remote users, something modern firewalls need to prevent. Such packets also have the potential to exploit hidden flaws in Mac OS or in third-party network applications. Norton Personal Firewall also has trouble with file transfers via FTP using a Web browser—you have to turn off the firewall temporarily to transfer files.—MEL BECKMAN



Sheep in Wolf's Clothing Norton Personal Firewall 1.0's solid-looking interface gives all indications that you're well protected from Internet predators, but this firewall won't protect you from denial-of-service attacks.

Expression 2

Vector-Based Paint Tool Gets a Robust Upgrade

The first incarnation of Expression didn't register on many designers' radar. But the ingenious drawing tool—which lets you create beautiful vector-based brush strokes, painterly textures, and illustrations that you can open in Macromedia FreeHand or Adobe Illustrator—has been rescued from obscurity by its creator, Creature House. Expression 2 adds needed export options and tools for handling bitmap images: you can not only import them but also colorize, distort, and even apply Adobe Photoshop filters to them.

Not a One-Trick Pony

Expression 2's illustration tools are deceptively easy to use. Preset brush strokes, patterns, and textures let you produce professional-level drawings right away; pros can adjust and refine the presets or create their own. But Expression is much more than a tool for adding brush strokes to vector-based illustrations: it lets you create photorealistic paint-media artwork, layered Photoshop documents, anti-aliased text effects, and even interactive Flash animations.

Expression's once-simple interface is now a profusion of palettes and hidden options, and the oddly named icons can be confusing. But with a little practice and some help from the HTML-based tutorial, you'll be up-to-speed in no time.

No Tablet Required

At the heart of Expression's power is its proprietary Skeletal Stroke technology, which yields variable-width strokes and subtle calligraphic and illustrative effects that otherwise usually require a drawing tablet. You can adjust a line's thickness by dragging an anchor handle, or add a calligraphic touch by changing the angle of a line's thickness. And with Skeletal Strokes, you can use entire graphics as repeating images along a path. A variation adds instances to each stroke's thickness or shape, resulting in a mini-animation. Unfortunately, the controls for creating such strokes are hidden and poorly labeled.

You can import and export raster-based images in the TIFF, BMP, JPEG, GIF, and Photoshop formats, and export your creation as a Flash, EPS, or Illustrator file. You can also produce interactive buttons, banners, and stand-alone Flash files ready to be added to your Web page.—ANDREW SHALAT

Master Strokes Expression 2's Skeletal Stroke technology lets you distort, refine, and resize each stroke using a simple anchor tool.

EXPRESSION 2

Rating: ♦♦♦♦

Pros: Powerful, versatile drawing tools; new export options; accessible to novices.

Cons: Hidden, poorly defined tool options; unhelpful icon labels.

Company's estimated price: $149

Company: Creature House, **www.creaturehouse.com**

MACWORLD'S BUYING ADVICE:

The arsenal of every illustrator and designer should contain Expression 2, alongside Macromedia FreeHand and Flash and Adobe Illustrator and Photoshop; the program's vector-drawing capabilities are that good. Despite its incomplete labeling and sometimes byzantine interface, once you master Expression 2, it just might be one of the most powerful imaging applications on your desktop.

Virus-Protection Programs

Intego's VirusBarrier, Symantec's Norton AntiVirus: Same Goal, Different Methods

NORTON ANTIVIRUS 7.0

Rating: 3½

Pros: Detects viruses in unopened e-mail; numerous configuration options; lets you schedule scans and online updates; comprehensive logging; bootable CD.

Cons: Complex interface.

Company's estimated price: $70

Company: Symantec, *408/517-8000*, **www.symantec.com**

VIRUSBARRIER 1.5.1

Rating: 3

Pros: Simple user interface; unobtrusive operation; contextual and drag-and-drop scanning; online updating.

Cons: Doesn't detect activity in Startup Items folder or viruses in unopened e-mail; logs only most recent scan; lacks scheduling function.

Company's estimated price: $50

Company: Intego, *305/629-3501*, **www.intego.com**

MACWORLD'S BUYING ADVICE:

Intego's VirusBarrier 1.5.1 is easy to use but provides incomplete protection. Still, it's better than no protection. Although you must invest some time learning to use Norton AntiVirus 7.0, it's a superior product (albeit a more expensive one). It gives you better protection, more flexibility, and schedulable virus-definition updates that keep your protection current.

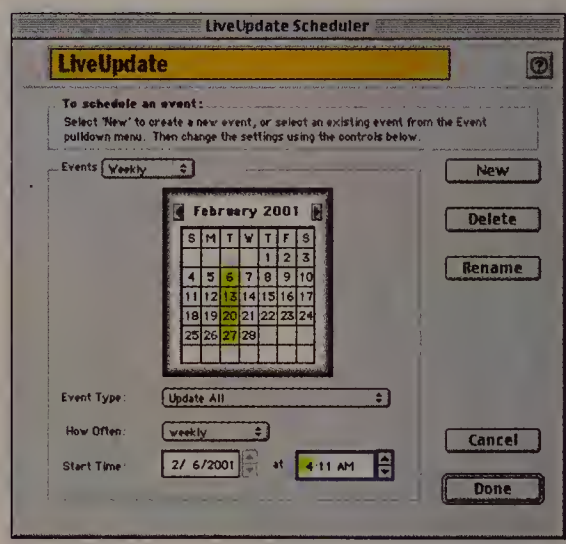
Today's viruses are more destructive than ever. They don't just damage your system; they use e-mail and file-sharing to spread to the systems of your friends and coworkers. The latest versions of antivirus programs from Intego and Symantec—VirusBarrier 1.5.1 and Norton AntiVirus (NAV) 7.0, respectively—promise to protect you from these persistent pests. VirusBarrier is less expensive and easier to use, while NAV is more complex but detects a wider range of problems.

The two programs have some basic features in common: fast batch scans of your entire hard disk, automatic detection of viruslike behavior in programs, and downloading of the latest virus definitions. They have different philosophies, however. VirusBarrier has a minimalist interface with very few options, and the program is relatively nonintrusive when it detects possible infections—it uses voice messages to announce most events, such as the deletion of a virus. NAV has a complex interface with dozens of options, and it can be interruptive, with an on-screen alert box that appears whenever the program encounters suspicious activity.

Creature Features

VirusBarrier's simple interface leaves little for you to do—it's configured to watch your system for suspicious activity and check all downloaded and copied files. Its Turbo mode lets you manually scan only the files that have changed since the last full scan, and contextual menus and drag-and-drop capabilities let you scan individual files and folders easily. VirusBarrier's log shows you the results of the most recent scan.

Out of the box, NAV performs similarly to VirusBarrier, but NAV has dozens of configurable options that let you choose to protect only parts of your hard disk (for improved performance) and control individual protection features, such as floppy-disk and downloaded-file scans. NAV can detect viruses in received e-mail and in programs (such as the AOL installer) that attempt to put items in your Startup Items folder; VirusBarrier failed to detect either of these events. NAV also permanently logs all activity, lets you schedule scans and virus-definition updates, and includes a bootable CD.—MEL BECKMAN



Time-Released Medication With Norton AntiVirus 7.0—which lets you schedule downloads of new virus definitions—your protection is always up-to-date.

eZ-Motion 1.0

Web Animation Tool Is Easy to Use, Easy on Your Wallet

Macromedia and Adobe rule the professional Web-graphics market, but many consumers who dabble in Web design can't afford those companies' industry-standard applications. Smaller outfits are now offering budget-minded alternatives; Beatware's e-Picture Pro (*Reviews*, November 2000), for example, gives you most of the power of Macromedia Flash for a fraction of the price. And eZ-Motion 1.0.1—a scaled-down version of e-Picture Pro—is designed for newcomers to animation; however, its powerful 3-D capabilities will appeal to pros as well.

Pannable Vectors

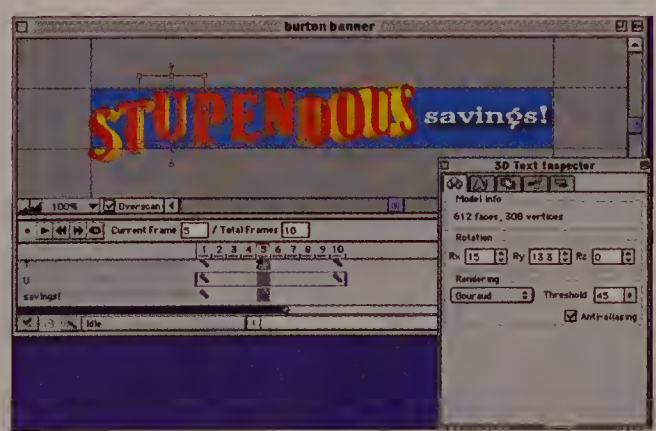
eZ-Motion is a vector-based program for creating Web graphics and animations. You can use the program's tools to create graphical objects and import artwork in standard file formats. Once you've placed an object on the "canvas" and set keyframes for its attributes, eZ-Motion interpolates the frames between your keyframes. The program includes live effects similar to Adobe Photoshop's Layer Styles, as well as keyframeable filters offering strong control over individual color channels.

Playback from within the program is jerky, so you'll probably have to render tests as you work to check the timing. If you need to retime portions of your animation, the Animation Wizard gives you sophisticated control over adding and deleting frames. Once you've brought your artwork to life, the Export Wizard lets you experiment to find the best output format—animated GIF, QuickTime movie, Flash SWF, or RealVideo.

Animation in Depth

Where eZ-Motion really stands out is in the realm of 3-D. The program comes with an extensive collection of useful 3-D objects and primitives, and you can import objects from LightWave and DXF 3-D formats. Better still, the 3D Text tool lets you create extruded text that remains editable even with effects and filters applied. All 3-D text and objects can rotate on any axis for dynamic effects.

The program has a few quirks and interface oddities (such as opacity sliders with settings as high as 300 percent), and eZ-Motion lacks support for interactivity and audio. Still, if you don't mind the silence and simply need to create play-through animations, eZ-Motion is an excellent and economical choice.—GALEN FOTT



eZ Writer eZ-Motion's 3D Text tool lets you give an exciting spin to your Web animations.

eZ-MOTION 1.0.1

Rating: ★★★½

Pros: Easy to use; affordable; powerful 3-D capabilities; excellent export options.

Cons: No audio support; no interactive capabilities; jerky playback.

Company's estimated price: $99

Company: Beatware, *650/556-7900*, **www.beatware.com**

MACWORLD'S BUYING ADVICE:

eZ-Motion lacks the animating finesse of Beatware's e-Picture Pro, and both programs stand in the long shadow of Macromedia's Flash. But eZ-Motion is a more affordable alternative to both, giving even novices an amazing amount of power for only $99.

Reason 1.0

Virtual Music Studio Combines Great Sound with Addictive Interface

REASON 1.0

Rating: 4½

Pros: Great sound; innovative interface; includes Mac and Windows versions.

Cons: Limited documentation.

Company's estimated price: $399

Company: Propellerhead Software, **www.propellerheads.se**

MACWORLD'S BUYING ADVICE:

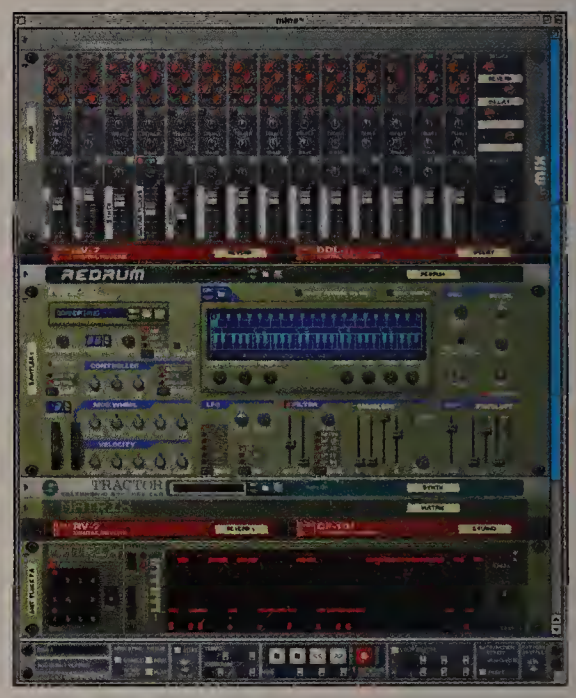
Reason's drum machines, loop players, and rhythm-pattern generators might suggest that the program is best suited to making dance music, but this virtual music studio's appeal should reach beyond the techno-rave crowd. Reason is a beautifully designed, versatile tool for creating just about any kind of music.

Musicians, here's another reason to take a Mac to your next gig. Propellerhead Software's Reason 1.0 is the latest application to join a crowded bandstand of programs that simulate music and audio hardware (see "Make Some Noise," August 2000). More than a software synthesizer, Reason is a virtual recording studio encompassing instruments, rhythm-pattern generators, effects units, a multitrack sequencer, and a mixer. And it has one of the most appealing user interfaces I've seen.

Reason's Repertoire

The hub of Reason's virtual studio is an on-screen version of the equipment racks that dominate recording studios and strain musicians' backs. To generate a tune in Reason, you add instruments to the rack, route them through effects boxes to add audio effects, create drum and bass patterns, and then arrange your final product using Reason's built-in sequencer.

Reason's instruments include the Subtractor, which has rich sound reminiscent of analog synths of the seventies. The program also includes a sampler that can play back recordings of anything from music to barking dogs, and it comes with 500MB of sampled audio. A virtual drum machine called Redrum—styled after legendary beat boxes such as Roland's TR-808—lets you program drum patterns and assign almost any sound to them. And the Dr. Rex loop player, which plays and modifies audio clips that have been sliced into their component beats, lets you perform feats such as changing the tempo of a recorded drum beat without altering its pitch.



Rack 'Em Up Reason's rack holds virtual instruments and other components.

The Bottomless Rack

One of Reason's most powerful features is the ability to handle as many instruments as your Mac's memory and processor can accommodate—just create a sampler and add it to your rack.

When you press the tab key, the rack rotates to expose each component's rear panel. Dangling cables show connections, which you can customize by dragging the cables from one jack to another.

You can save songs in a variety of formats, from AIFF audio files to self-contained Reason files for Web distribution. Reason can also stream audio directly into a sequencer.—JIM HEID

VersaCAD 2001

Competent 2-D–Drafting Tool Makes a Comeback on the Mac

One of the earliest CAD programs for the Mac, VersaCAD is being reintroduced after ten years as a Windows-only product. But this plain-vanilla 2-D–drafting program still makes sense in an age of photo-realistic QuickTime walk-throughs and other 3-D effects, because many people rely on 2-D drafting. Architects and mechanical engineers still use blueprints as the basis of most of their activities, and Archway Systems' VersaCAD 2001 offers a friendly, intuitive way to generate 2-D drawings.

New and Nimble

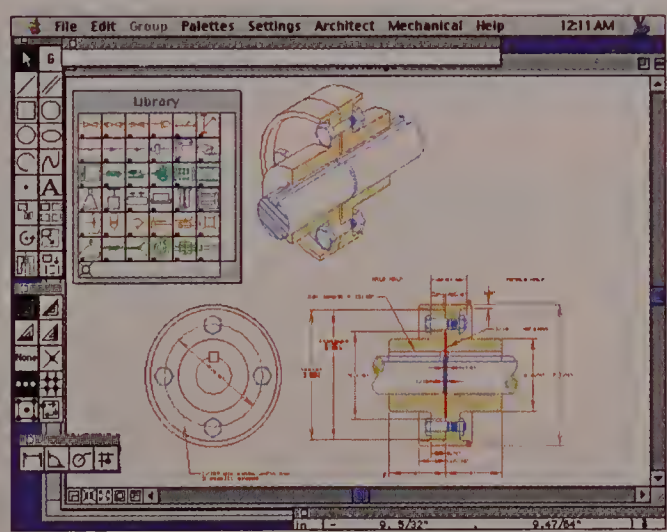
VersaCAD 2001 is tiny (about 1.3MB) by current CAD standards, making it lightning fast on modern G3s and G4s. (The CD includes a copy of VersaCAD 4.0.1, which lacks a few features found in the 2001 version but doesn't require a Power Mac.)

Despite its small size, VersaCAD can tackle challenging problems—such as accounting for variations in machine-shop practice—thanks to Archway Systems' careful attention to feature selection. In some areas, VersaCAD is the most complete CAD product available and the easiest to use. It also includes good libraries of drawing elements.

As Time Goes By

Other aspects of VersaCAD are less wonderful. The shipping version was clearly produced in haste; several of the VersaCAD 4.0.1 files wouldn't open, and the awkward dimensions of the shoddy manual make it difficult to use. Instead of a modern HTML-based help system, VersaCAD offers balloons left over from its System 7 incarnation. The HyperCard-based utilities are more nostalgic than impressive in the age of the Web. And VersaCAD can't handle GIF or JPEG images, although it includes translators for DXF and IGES import and export.

But the main drawback is that VersaCAD is competing with products that have spent the past ten years evolving rather than sitting on the shelf. The basics of drafting may not have changed much in that time, but software design has improved significantly. The $795 PowerCADD 2000 (*Reviews,* December 2000) has a much more powerful, feature-loaded interface for 2-D drafting, and the $795 VectorWorks 1.0 (*Reviews,* June 1999) has added smoothly integrated, full-featured 3-D CAD to its 2-D repertoire.—CHARLES SEITER



Tool Time VersaCAD 2001 presents on-screen parts libraries for architectural and mechanical drawings.

VERSACAD 2001

Rating: ★★★½

Pros: Fast; good selection of drawing elements; runs on older Macs; easy to use.

Cons: No HTML-based help; 3-D features aren't integrated.

Company's estimated price: $895

Company: Archway Systems, *714/374-0440,* **www.versacad.com**

MACWORLD'S BUYING ADVICE:

VersaCAD 2001 is no bargain compared with competing products, but it's an excellent 2-D drafting program that's especially strong on mechanical drawing features. The program is extremely fast on modern Macs, and it's well suited to mixed environments of old and new hardware.

UTILITY LETS YOU SCRIPT REPETITIVE FILE AND INTERNET ACTIVITIES

Aladdin Transporter 1.0

Rating: ♦♦♦½

Pros: Capably handles common file and Internet activities; supports many compression protocols.

Cons: Compression and encoding actions can conflict with those of your e-mail program; difficulty creating scripts that include choices.

Company's estimated price: $149

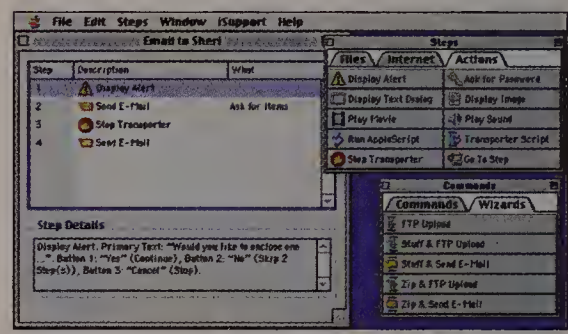
Company: Aladdin Systems, *800/732-8881,* **www.aladdinsys.com**

Macworld's Buying Advice: As a visual scripting utility for automating file-handling, e-mail, and FTP activities, Aladdin Transporter 1.0 has some problems, but the workarounds are simple. Powerful scripting capabilities mean you must do little more than choose steps and set options, and Transporter is easier to learn than AppleScript.

Do you spend a lot of time performing repetitive e-mail, file-handling, and FTP tasks? Aladdin Transporter 1.0 lets you create desktop icons, called *transporters,* that automate these activities. For example, you can drop files on transporters to compress them into StuffIt or Zip archives and then e-mail or FTP them to a particular person or site. In addition to automating your own activities, you can share transporters with others. For instance, you could make one that lets people log on to your password-protected FTP site and upload files.

Creating transporters is a relatively simple process—you choose script steps and set options—but it can be hard to get the logic right. Transporters that present choices (via a dialog box) can be particularly confusing to design.

Mail transporters send messages and files through your e-mail program. However, Transporter can't tell whether your e-mail program is set to compress attached files. If it is, your files will be compressed twice, first by Transporter and then by your e-mail program.—STEVE SCHWARTZ



Constructing a Transporter You can create a transporter with a wizard (lower right) or by choosing actions (upper right).

DiskWarrior® has
than

1999 Macworld Editors' Choice Awards
Winner, Utility Software. "DiskWarrior is an excellent ax to add to your disk-repair and -maintenance arsenal. DiskWarrior's ease of use, speed, and new method of fixing disk problems make it a powerful disk-maintenance product."

1999 MacUser Awards
Best Utility/Enabling Software. "For providing a new, easier to use, safer, and often more successful alternative to more bloated recovery applications, the judges felt DiskWarrior deserved top billing..."

1999 Apple Design Awards
Most Innovative Product, Runner-up Best New Product

5 Out Of 5 Stars
"Every Mac on the planet can benefit from DiskWarrior!"

Repairs disk problems such as disks that won't mount, files you
Now with DiskShield™ to prevent damage to your disks before it

VIDEOCONFERENCING SOFTWARE PROVIDES CROSS-PLATFORM COMPATIBILITY

VideoLink pro 1.1

Despite the Mac's video prowess, VideoLink pro 1.1 is the Mac's first commercial videoconferencing package to support the H.323 standard, making it compatible with Windows programs such as Intel ProShare.

VideoLink pro is a snap to set up. And if you register with Smith Micro's Gatekeeper server, you can connect using e-mail addresses, rather than IP addresses, which change with every session. (This feature won't work if you use NAT connections such as DHCP and BootP.)

You'll need a broadband connection, such as DSL, cable modem, or high-speed LAN, to get reasonable video quality. With a 56K modem, you can use the program's audio and text chat features but not the video features. Even with broadband, the video is not exactly smooth (compared with equivalent Windows products)—we clocked VideoLink pro at about 10 frames per second over a 128-Kbps connection.—BECKY WARING

The Phone of the Future? On the left is the outgoing video, and on the right is the (somewhat choppy) incoming video over DSL.

Rating: ♦♦♦

Pros: A snap to set up; connects with any H.323 videoconferencing system; Gatekeeper feature makes it easy to contact other users.

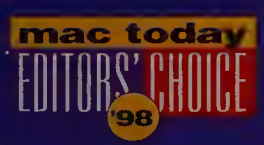
Cons: Low frame rates; requires broadband connection for video.

Company's estimated price: $60

Company: Smith Micro Software, *800/700-1299,* **www.smithmicro.com**

Macworld's Buying Advice: Though it shows slightly sluggish performance over DSL, VideoLink pro is an easy-to-use utility that can turn your Mac into a videophone.

won more top awards
any disk utility ever.



Mac Today 1998 Editors' Choice Awards
Outstanding Disk Rescue Product. "DiskWarrior belongs in the arsenal of every Mac owner!"

MacHome - Five Apples, MACnificent Award
"DiskWarrior is a deceivingly simple yet incredibly powerful disk repair utility, which is able to fix your disk problems with zero effort."

"DiskWarrior comes to the rescue..."

MacHome 8th Annual Home Choice Awards
Best Utility. "Got lots of votes for repairing and preventing damage to hard disks so well. DiskWarrior 2.0 is a quick solution to faster, more stable hard drives."

an't trash, and folders that have disappeared.
ccurs. Visit www.Alsoft.com for details.

WWW.ALSOFT.COM
ALSOFT
1-800-257-6381

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FONT UTILITY OFFERS TOO LITTLE TOO LATE

TypeTamer 2

Rating: ★★½

Pros: Organizes font menus; identifies TrueType and PostScript fonts.

Cons: Limited compatibility; nonessential features.

Company's estimated price: $50

Company: Impossible Software, *949/470-4800*, **www.typetamer.com**

Macworld's Buying Advice: If you already use a font utility, you won't need TypeTamer 2. But if you rely only on the fonts you keep in your System Folder, you might find it handy.

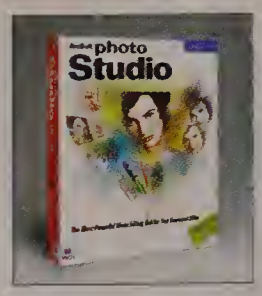
If you keep more than a hundred fonts in your System Folder, you need a font utility. TypeTamer helps manage long font menus, but since its initial release, it has lost its relevance in a world of more full-featured tools.

The latest version, TypeTamer 2, lets you group and view fonts in easily negotiated sets, and shows WYSIWYG previews of fonts in different sizes. It also identifies TrueType and PostScript fonts.

But these days, tools such as Diamondsoft's Font Reserve 2.5 can activate and deactivate sets of fonts: a much better way to manage them. Also, TypeTamer is not compatible with Adobe InDesign and other software, and it behaved inconsistently in QuarkXPress.—ANDREW SHALAT

IMAGE EDITOR HAS LOW PRICE, PRO FEATURES

PhotoStudio 4



Rating: ★★★½

Pros: Strong basic tools; multiple undos; re-editable text; macros.

Cons: High-resolution images print with pixelation; images can be soft.

Company's estimated price: $100

Company: ArcSoft, *800/762-8657*, **www.arcsoft.com**

Macworld's Buying Advice: Despite some shortcomings, PhotoStudio 4 offers variations on many of Adobe Photoshop's most powerful features—capabilities you won't find in the similarly priced Photoshop LE.

ArcSoft's PhotoStudio 4 gives you the basic image-editing tools found in the full version of Adobe Photoshop, for approximately one-sixth the price—as does the light version of Photoshop, the $95 Photoshop LE (*Reviews*, January 2000). But while PhotoStudio 4 lacks the industry-standard Photoshop interface, it offers several high-end features that Photoshop LE doesn't. Foremost among these are multiple undos, re-editable text, macros, and batch processing. Experienced users can even edit an image's individual color channels. Unfortunately, a bug makes high-resolution photos print with pixelation, and changing an image's orientation causes undesirable softening of details.—GALEN FOTT

ONLINE REVIEWS

Macworld.com

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www.macworld.com/2001/05/reviews/online.html

LINK

Two-megapixel cameras
- ★★★½ FujiFilm FinePix 2400 Zoom
- ★★★ HP PhotoSmart 315
- ★★★½ HP PhotoSmart 618
- ★★★ HP PhotoSmart 912
- ★★★ Kodak DC3400
- ★★½ Kodak DC3800
- ★★★★ Olympus C-2040 Zoom

Print-layout software
- ★★½ PhotoPrinter Pro 2000

Privacy software
- ★★★★ PGP Desktop Security 7.0.3

Word processor
- ★★★½ Nisus Writer 6.0.1

3-D–modeling software
- ★★ Swift 3D 1.0

Internet server
- ★★★★½ Qube 3

FireWire tape drives
- ★★★★ Ecrix VXA-1 FireWire Retrospect Desktop Bundle
- ★★½ Imation Travan FireWire 20GB Drive
- ★★★½ OnStream Echo FireWire Drive

Applied-mathematics software
- ★★★★ Maple 6

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PETER COHEN

The Game Room

oni: This word from Japanese folklore denotes a creature of great size and strength with a fearsome appearance. It's also the title of Bungie Software's long-awaited 3-D combat action game, published for the Mac by Gathering of Developers. But who or what is the oni in this game? Is it your lithe and limber alter ego, Konoko, or someone or something else? You'll have to find that out by playing the game.

Oni takes place in a dystopian future's giant metropolis, which is rendered in true Japanese anime style. Konoko's training as a special agent enables her to infiltrate the activities of the Syndicate, an underground crime ring. Headed by Boss Muro and populated by legions of cybernetically enhanced thugs, the Syndicate traffics in illegal technology and works insidiously toward global domination.

Soon Konoko discovers that defeating the Syndicate won't be as easy as she thought. She uncovers mysteries within mysteries, some involving her background—who she is and where she comes from become an integral part of the plot. The tale works like origami, with fold after fold adding complexity. Despite Konoko's single-minded focus on taking Muro off the streets, Muro apparently wants to keep her around. Why? What connection do they share? And can she trust those with whom she works most closely?

These Hands Are Lethal Weapons

As those who know me can attest, nothing about Peter Cohen says *delicate.* I'm big and clumsy. I tend to frighten small children, animals, and Macworld Expo attendees—maybe *I'm* the oni. That's why for me, Oni offers pure escapist entertainment. Konoko, whom you control throughout the game, has the agility of a gymnast, the stamina of an Olympic distance runner, and the stealth of a jungle cat. For a big ol' schlub like me, slipping into Konoko's shoes is an exotic treat.

As Konoko, you must infiltrate heavily fortified buildings bristling with well-armed guards and automated defense systems. The 3-D action takes place from a third-person perspective, with the "camera" generally positioned behind and above Konoko's body.

You certainly have no shortage of futuristic weapons at your disposal, but Konoko's real strength is in the martial arts. You start the game with a variety of moves—kicks, punches, and throws—and at various points you learn more-advanced techniques. Oni has some of the most fluid player control I've ever seen. By combining different keystrokes, you can make Konoko execute powerful moves. You'll find a library of these in her diary, which you can access with a click of the mouse while playing. Also look for detailed information about weapons, special items, and Konoko's objectives through the in-game help screen.

Like Tomb Raider, Oni emphasizes stealth and planning over raw firepower. You must think through situations rather than just reacting, and you'll also have to solve a few puzzles along the way. Like Unreal Tournament, it has no shortage of action. However, unlike both these games, Oni is free of gore and bloodshed. The story is written to appeal to an adult sensibility, but without strong language

continues

TIPS **Try these tricks to keep the baddies at bay:**

• Oni's camera control system often allows you to see through walls and around opaque objects. This can help you spot trouble before it spots you.

• Konoko can change direction when she's jumping. This little trick enables her to descend flights of stairs quite rapidly, and it occasionally comes in handy in combat.

• Sometimes it's safer to reload Konoko's weapon in a quiet spot—even if it means wasting a round or two—to avoid having to reload during a firefight.

• Keep as many hyposprays on Konoko as possible. That way, you can activate her Daodan power when you need it most—when she's about to take on a crowd of angry thugs, for example.

• Find a weapon that suits your strategy and stick to it. Don't succumb to the temptation to pick up every weapon you find. And remember that weapons have mass and slow you down. Stow Konoko's gun whenever she's not using it.

or R-rated imagery. When Konoko and her opponents come to blows, you'll see bursts of light but no blood. Some hard-core gamers may be disappointed, but this certainly makes Oni accessible to a larger audience. If you're a parent, rest assured that the action here is at the level of a Saturday morning cartoon—your kids won't encounter any gruesome showers of body parts.

Low-Calorie Eye Candy

Oni's environment is spartan. Konoko walks through and around skyscrapers, warehouses, and low-rise buildings. The imaginative ornamentation of medieval castles or giant spaceships you find in other games is absent here.

Oni is all about close-quarters action, not sightseeing. I'm perfectly happy that the primary drain on Oni's frame rate comes from character animation, not from rendering realistic-looking backgrounds or other such wallpaper. However, some of the large open spaces in Oni can put a strain on Macs at the low end of the game's system requirements. Make sure to check these before you plunk down your money.

Only the Oni Konoko gives a lesson in civility.

Nobody's Perfect

So what's wrong with this game? The lack of network support hurts its long-term playability. If you'd hoped for some chopsocky action against your Internet buddies or other folks in the office, forget it. That's a shame, because multiplayer support can keep a game fresh long after you exhaust its single-player possibilities. Oni does have user-adjustable levels of difficulty, however, so you can play it at a few different settings to test your limits.

Oni lacks the ability to save games at any time, opting instead for a system that lets you save only at preset points in each chapter. You may be annoyed that you have to make Konoko jump off the same roof over and over, but you're rewarded with a very clear index of saved games that positions you at key moments.

You can tweak audio and graphics settings, video resolution, and difficulty level on Oni's main screen, but the method for customizing control keys is obtuse; rather than making it an in-game option, as most games do, Oni forces you to launch the game while holding down the shift key to remap commonly used keys. Alternately, you can customize Oni's controls by using a text editor to edit a game file. But what is this, Windows? This feature should be out in the open.

Macworld's Buying Advice

Though it lacks multiplayer support and has a quirky approach to customizing keys, Oni's almost flawless execution of hand-to-hand combat makes it a remarkable game. Oni provides an excellent way to lose yourself for a week or two in a fun adventure. **m**

PETER COHEN is a senior editor at MacCentral.com, and when he's not playing games, he can usually be found ragging on them, ranting about them, or harassing other Mac gamers on GameRanger.

ONI

Rating: ♦♦♦½ **Company's estimated price:** $40

Pros: Excellent player control; entertaining story; no gore.
Cons: No multiplayer support; clunky key configuration.

Company: Gathering of Developers, *214/303-1202*, **www.godgames.com**

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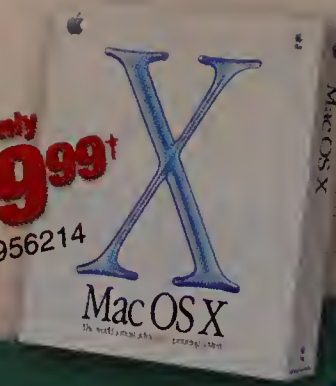

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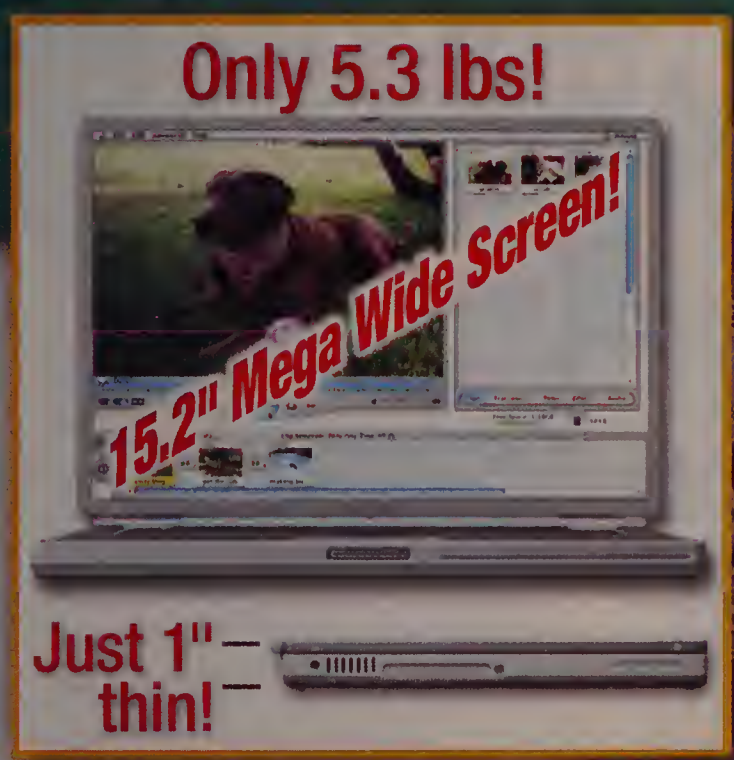

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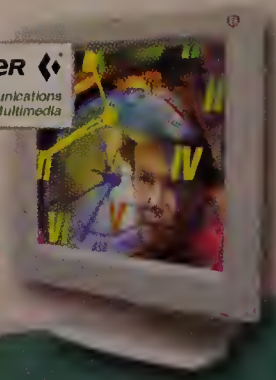

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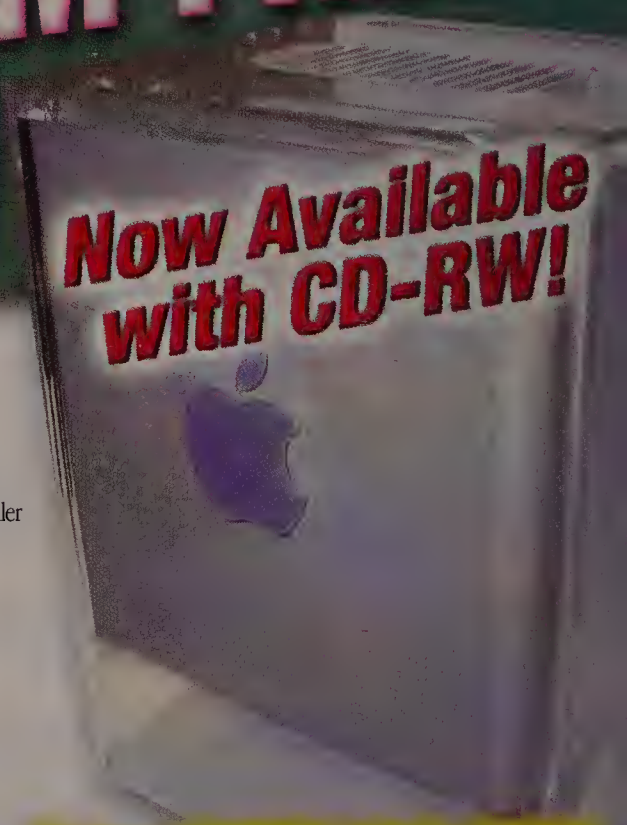

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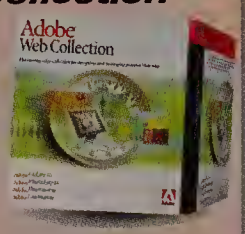

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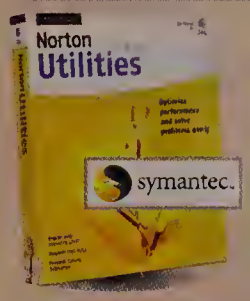

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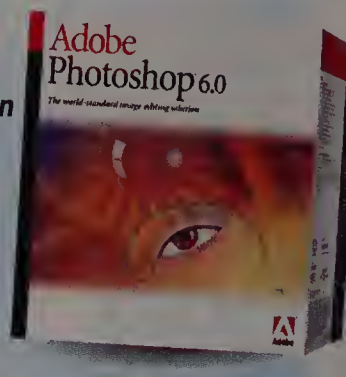

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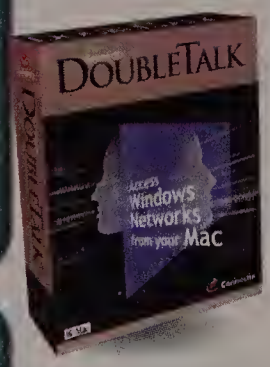

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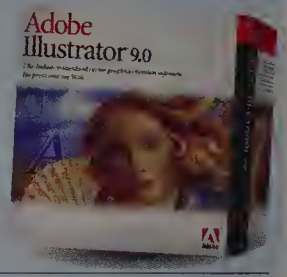

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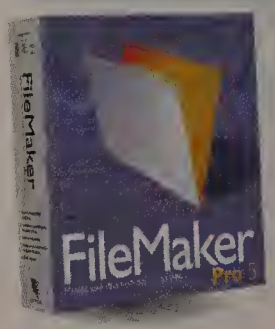

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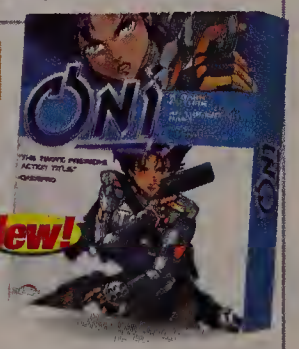

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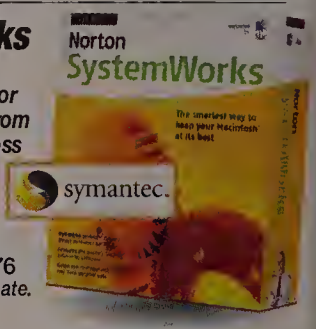

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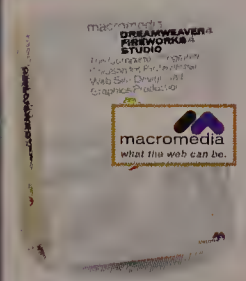

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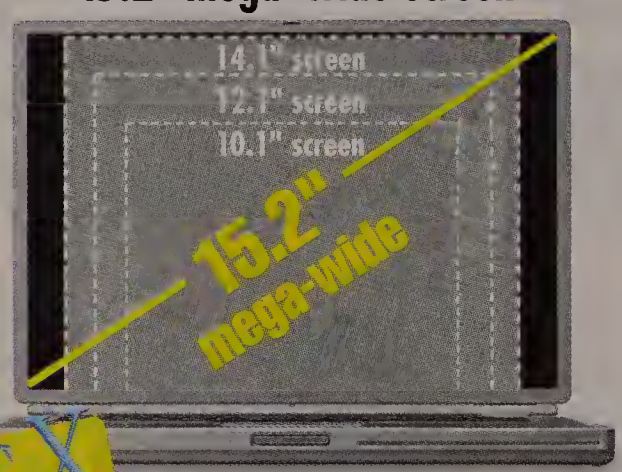

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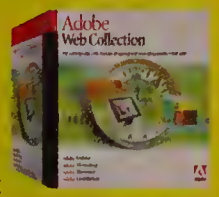

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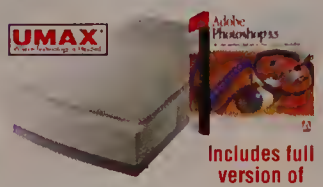

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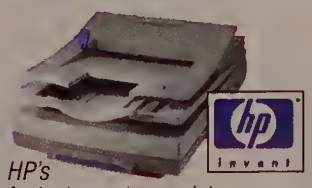

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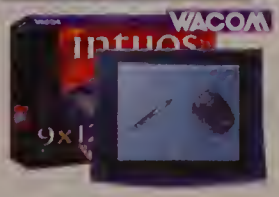

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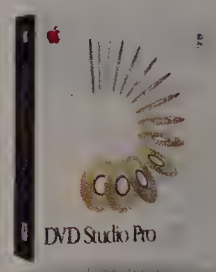
Besides adding all-new, faster G4 processors, Apple has completely redesigned the new Power Macs for up to 57% greater performance than that of a 1.5GHz Pentium 4. A whole host of high-performance hardware, including the 4X AGP graphics bus, on-die L2 cache running at processor speed, new backside level 3 cache, huge hard drives and much more help to boost overall system performance. Apple has also included four 215 Mbps PCI slots (compared to three 100 Mbps slots) for greater expandability, a CD-RW drive in three of the Power Macs and a first-of-its-kind hybrid CD-RW/DVD-R SuperDrive in the 733MHz Power Mac G4.

Made-for-DVD magic With Apple's iDVD software, included with the 733MHz G4, putting your video presentations and home movies on DVD media is as easy as dragging and dropping files into folders. For the professional touch, use Final Cut Pro and Apple's new DVD Studio Pro software (both sold separately) to help you produce studio-quality DVD titles.



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G4	466	533	NEW G4 Dual	667	733
Processor	466MHz	533MHz	533MHz	667MHz	733MHz
Hard Drive	30GB/ 5400RPM	40GB/ 7200RPM	40GB/ 7200RPM	60GB/ 7200RPM	60GB/ 7200RPM
RAM	128MB	128MB	128MB	256MB	256MB
Optical Drive	CD-RW	CD-RW	CD-RW	CD-RW	SuperDrive CD-RW/ DVD-R
Graphics Card	ATI RAGE Pro 128/16MB	NVIDIA GeForce2 MX/32MB	NVIDIA GeForce2 MX/32MB	NVIDIA GeForce2 MX/32MB	NVIDIA GeForce2 MX/32MB
FireWire/ USB	2 Ports ea.	2 Ports ea.	2 Ports ea.	2 Ports ea.	2 Ports ea.
Ethernet	Gigabit	Gigabit	Gigabit	Gigabit	Gigabit
Cache	1MB L2	1MB L2	1MB L2	256k L2 1MB L3	256k L2 1MB L3
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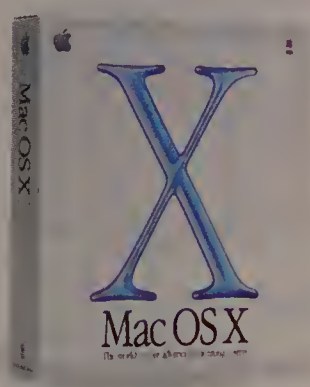

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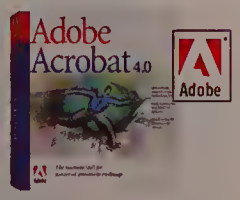

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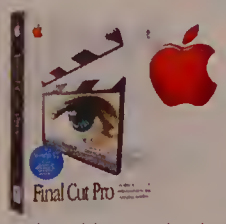

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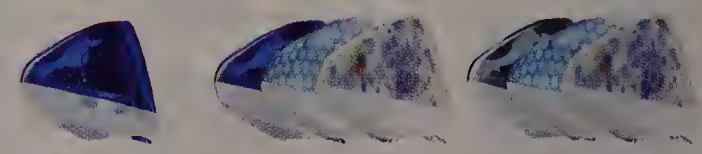

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RAM	64MB	64MB	128MB
Optical Drive	CD-ROM	CD-RW	CD-RW
FireWire and USB	2 Ports each	2 Ports each	2 Ports each
iMovie 2	Yes	Yes	Yes
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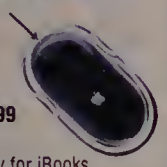

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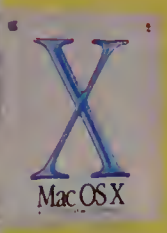

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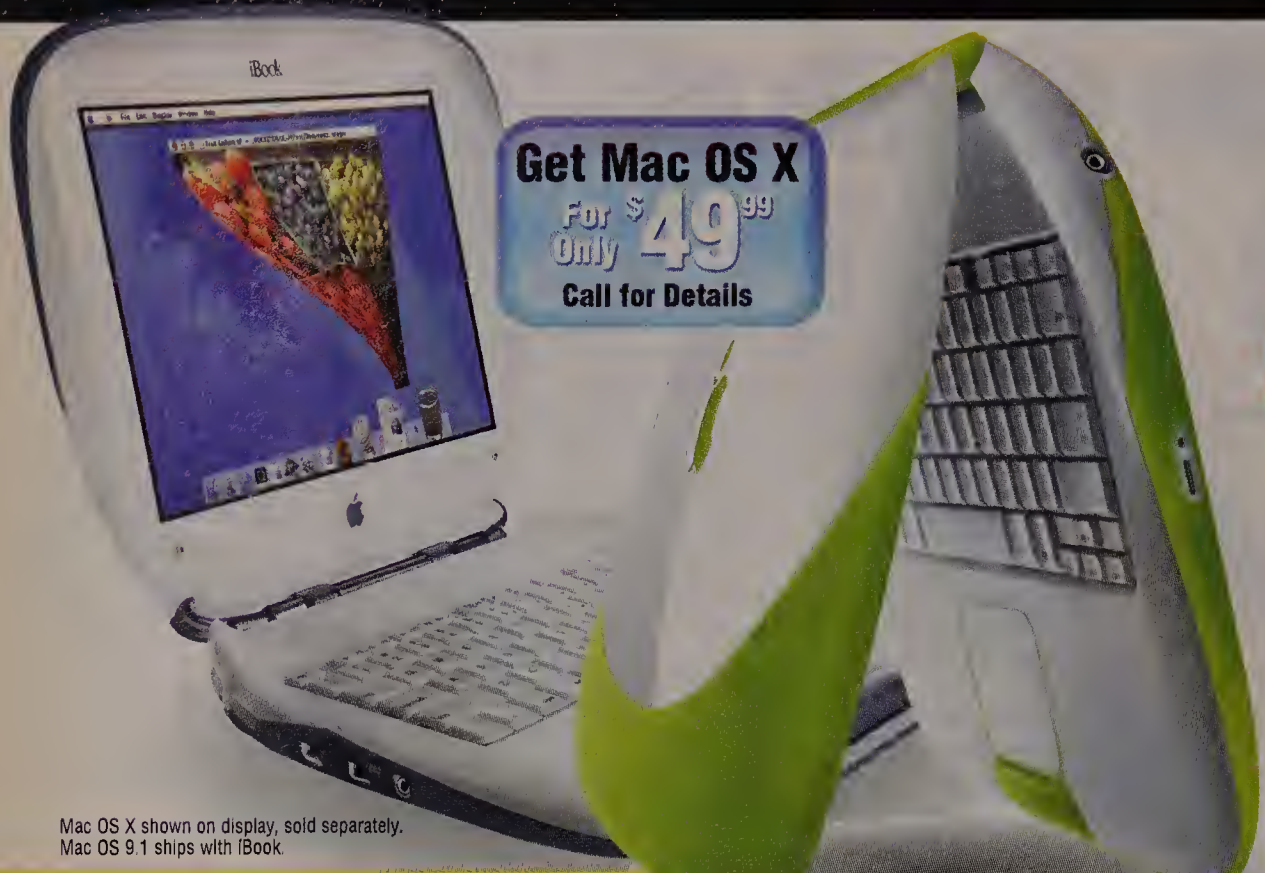

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FireWire	1 Port	1 Port
AirPort Ready	Yes	Yes
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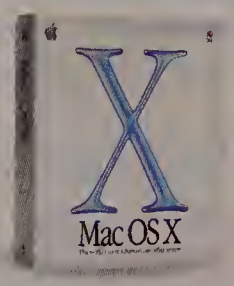

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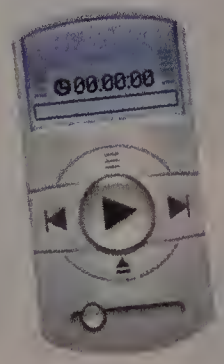

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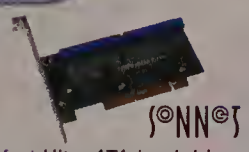

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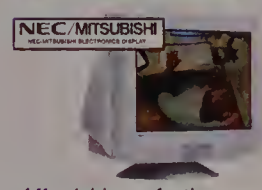

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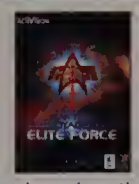

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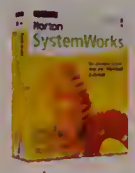

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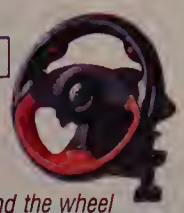

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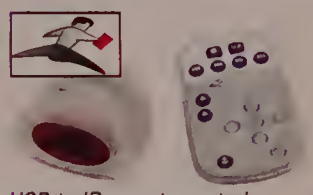

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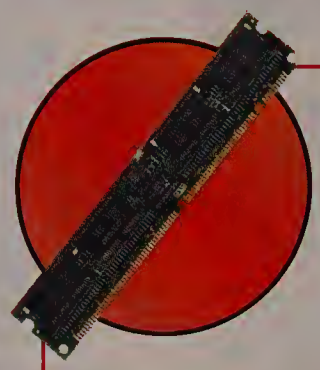

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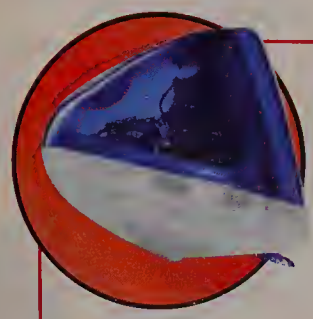

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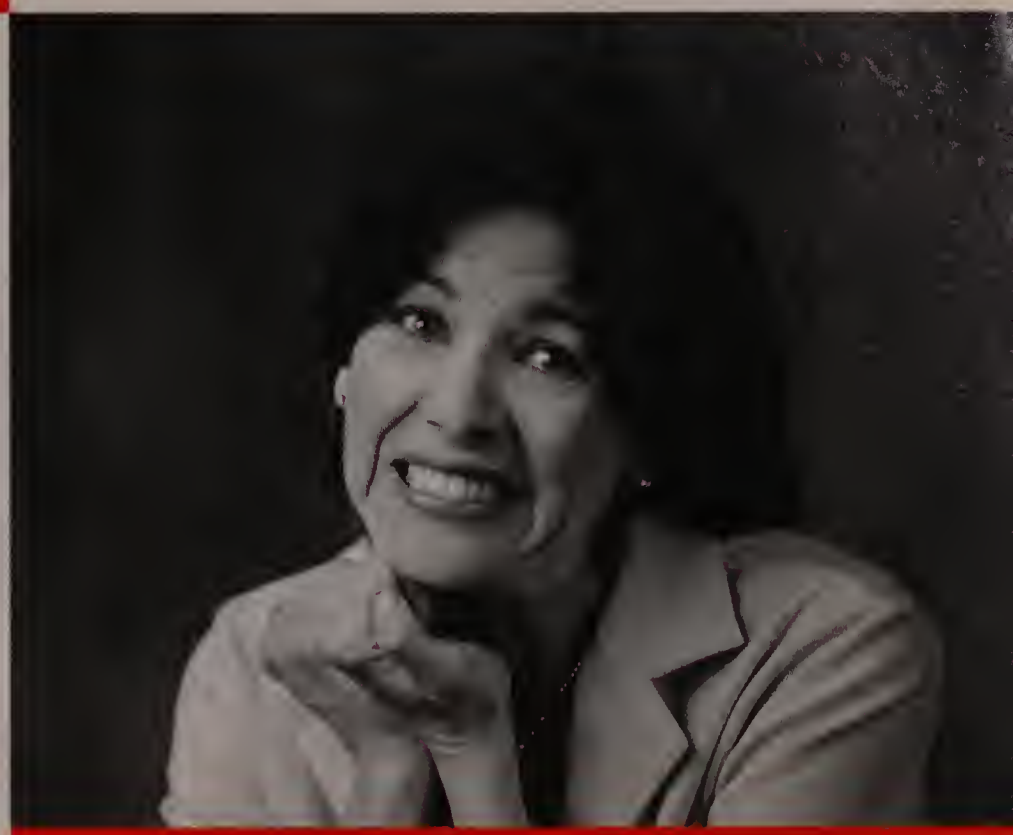

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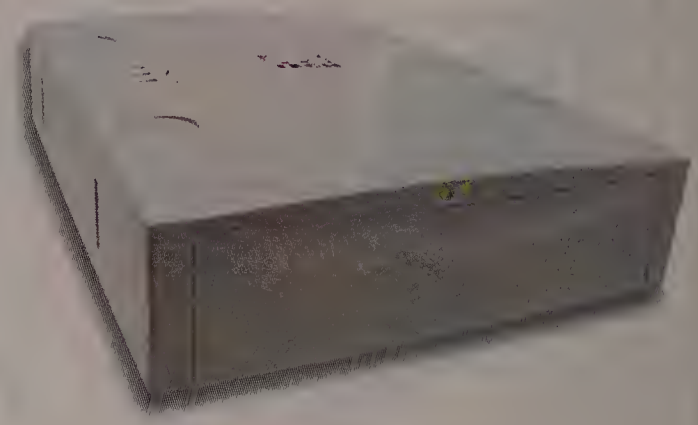

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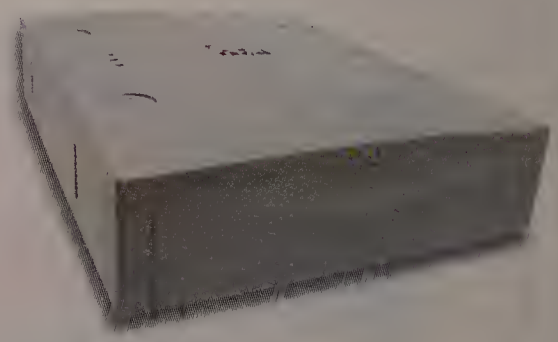

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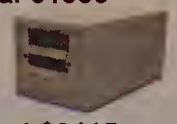

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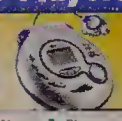

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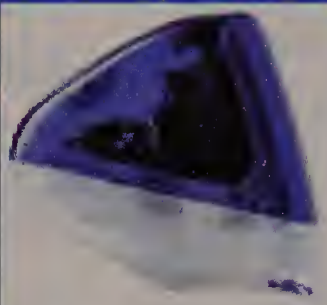

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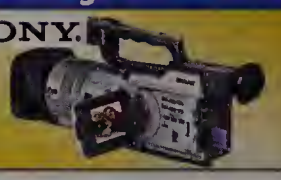

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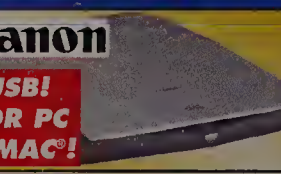

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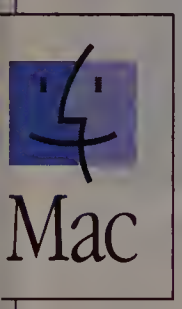

Macworld magazine, in conjunction with the Apple Developer Connection, built this very special Mac OS X Showcase section to keep you, our valued reader, apprised of the hottest products built especially to take advantage of Apple's new operating system. You can rest assured that this new section will grow with each passing month, spotlighting the coolest new products for Mac OS X. Be sure to check the Mac OS X Showcase monthly for a wide variety of new and innovative solutions that will make your Macintosh and Mac OS X experience as enjoyable as possible.

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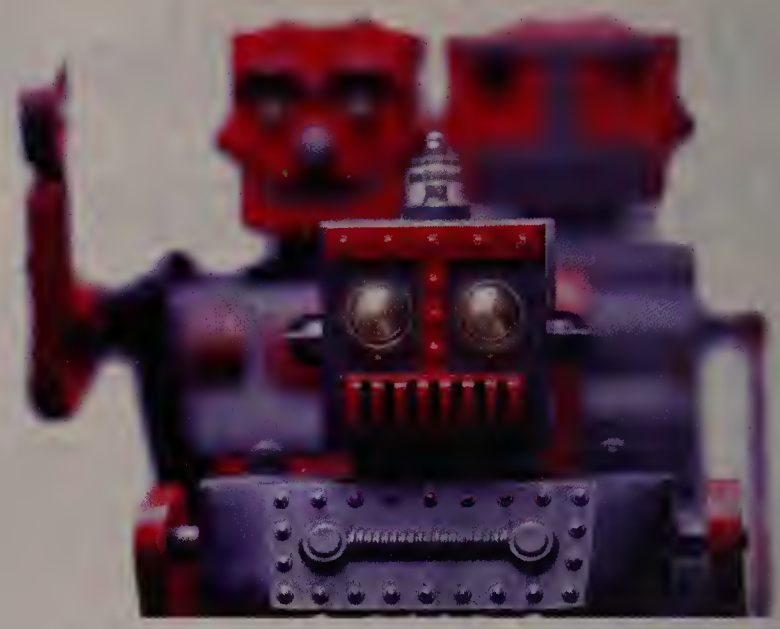

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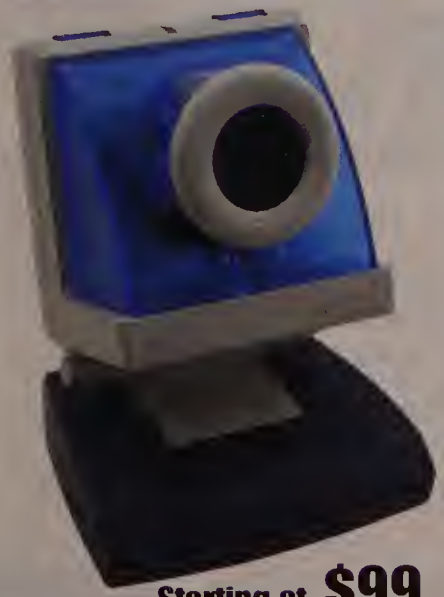

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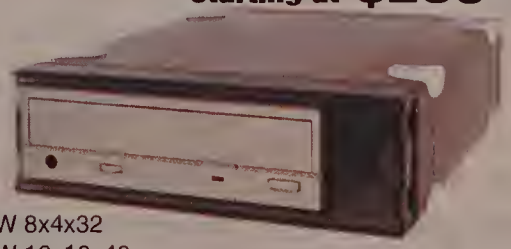

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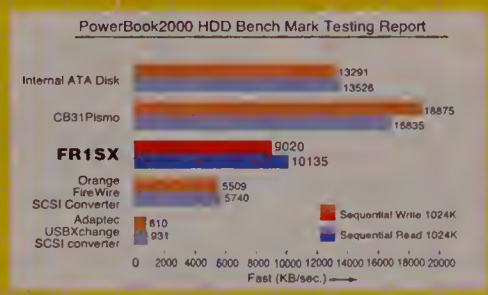

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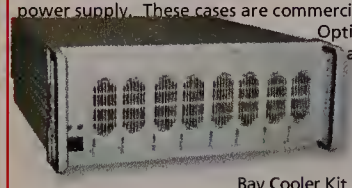

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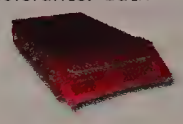

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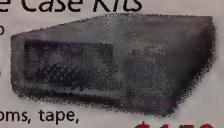

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FireVue™ FireWire Hot-Swap Bay

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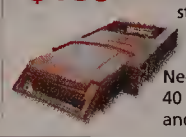

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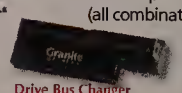

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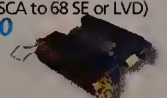

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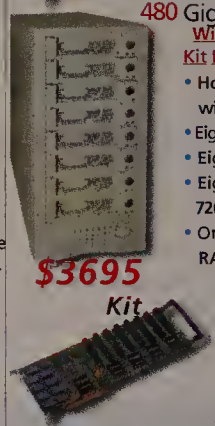
- Two Hot-Swap Bays with fans
- Two 36" Teflon Cables
- Two Maxtor 60 Gigabyte 7200 rpm ATA 100 IDE Drives
- One 2 Port Escalade™ PCI RAID Controller.

240 Gigabyte 4 Hot-Swap Bays
Windows and Linux ONLY

$1895 Kit

Kit Includes:
- Hot-Swap Case, 4 Bays, with 200 watt power supply.
- Four Hot-Swap Bays with fans
- Four 36" Teflon Cables
- Four Maxtor 60 Gigabyte 7200 rpm ATA 100 IDE Drives
- One 4 Port Escalade™ PCI RAID Controller.

480 Gigabyte 8 Hot-Swap Bays
Windows and Linux ONLY



$3695 Kit

Kit Includes:
- Hot-Swap Case, 8 Bays, with 250 watt power supply.
- Eight Hot-Swap Bays with fans
- Eight 36" Teflon Cables
- Eight Maxtor 60 Gigabyte 7200 rpm ATA 100 IDE Drives
- One 8 Port Escalade™ PCI RAID Controller.

All RAID Cards include support for RAID 0, 1, 10, Hot-Swap and Hot-Spare. Ultra Fast 100MB/s with low CPU overhead. These cards are unbelievably fast.

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Speeds up to 100MB/s! 1/2 of a Terabyte with today's new larger capacity drives. Cost effective and fast. Linux, Win 98, ME, NT, 200

Raid 0, 1, 10, Hot-Swap
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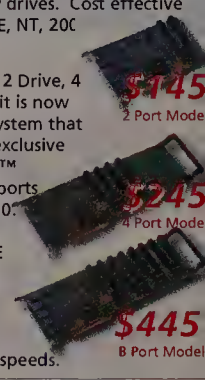
Offered in three packages, 2 Drive, 4 Drive, and 8 Drive models, it is now easy to configure a RAID System that fits your needs. Using the exclusive TwinStor™ and DiskSwitch™ technologies, Escalade supports RAID 0, RAID 1, and RAID 10. It also allows for both HOT-SWAP and HOT SPARE support. These exclusive technologies create an environment that provides both data security and blistering fast speeds.



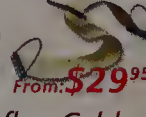
$145 2 Port Mode

$245 4 Port Mode

$445 8 Port Model

IDE Vue™ Ultra 66/100 TPO Cable

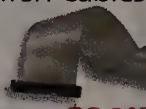
Ultra 66/100 TPO Cables use 80 conductor cable and special 40 pin connectors. The best you can buy for internal or external use.



From: $29.95

IDE Vue™ Ultra 100 Teflon Cables

Ultra 66/100 Teflon Cables use 80 conductor cable and special 40 pin connectors. These are designed for RAID applications or where additional shielding and protection is required.



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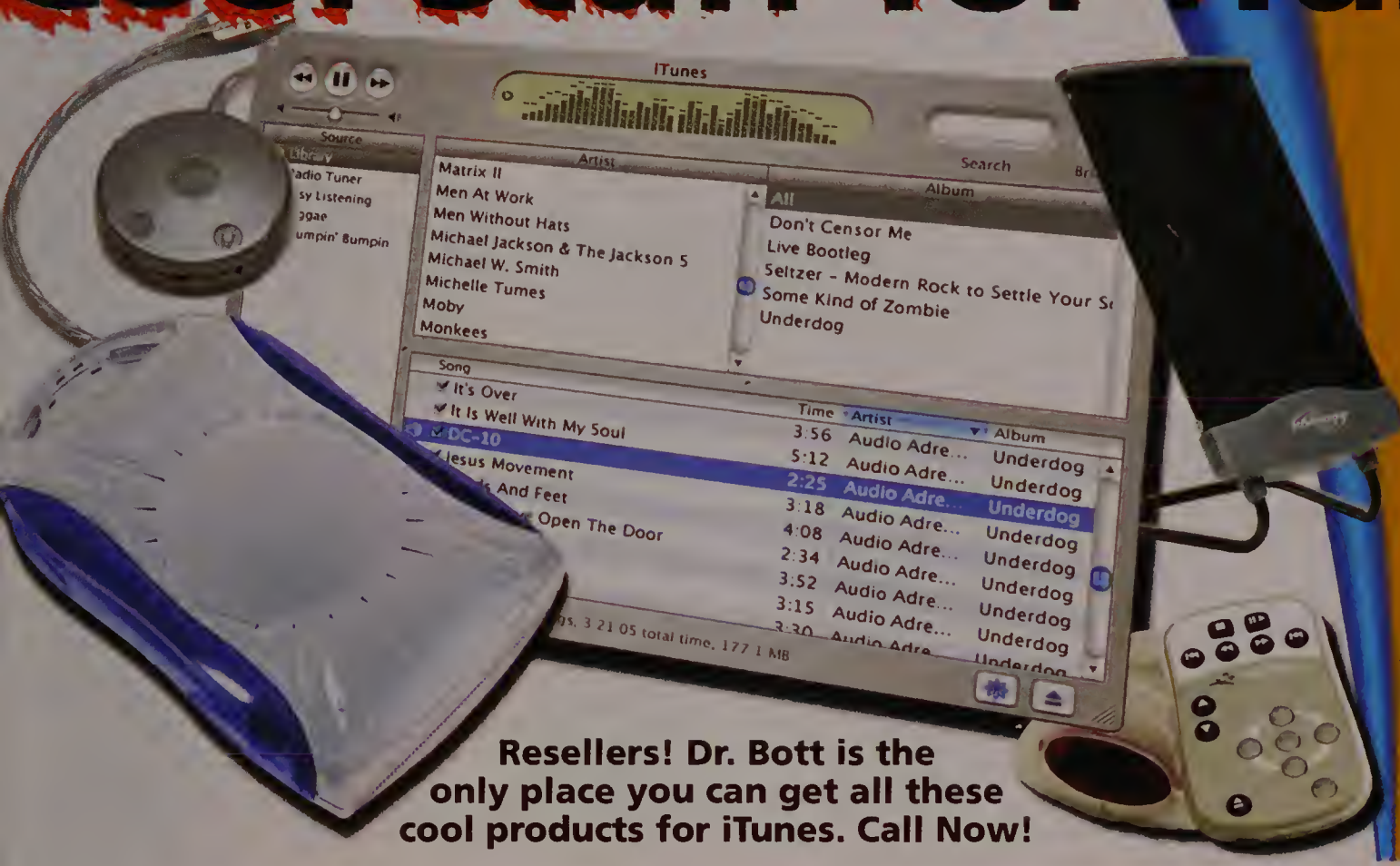

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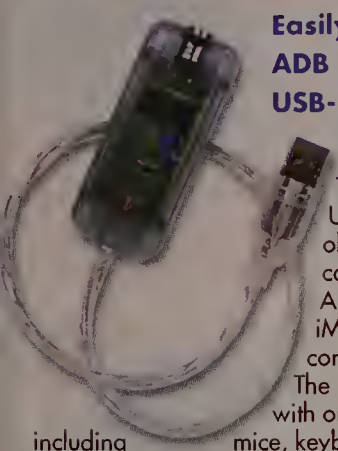

Easily Connects Any ADB Device To USB- Equipped iMac or PC Computer

The innovative iMate USB to ADB adapter allows users to easily connect their existing ADB peripherals to iMacs, Macs with USB cords, and PCs with USB. The iMate is compatible with any ADB device including mice, keyboards, trackballs, trackpads, hardware dongles, and AppleVision displays. The iMate is a simple and inexpensive solution for making the transition to USB as well as preserving your investment in ADB devices.

- One iMate can support multiple devices
- Activity LED
- Supports keyboard soft power on and off
- Successfully tested by Apple and major hardware manufacturers

g4Port™

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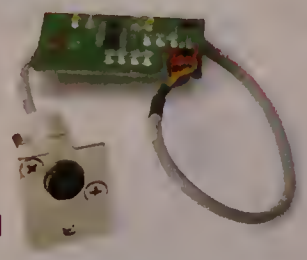
- **Easy to install**
- **Economical**
- **Cost Effective**



Also available for G3's and Cube Macs

The g4Port universal serial adapter is the perfect companion for your new G4 (AGP graphics) computer. Designed from the ground up with the G4 in mind it supports every serial device that works on your older Macs.

The g4Port replaces the internal modem for 100% serial compatibility and provides a great transition for people with existing serial equipment. *(Internal modem must be removed)*

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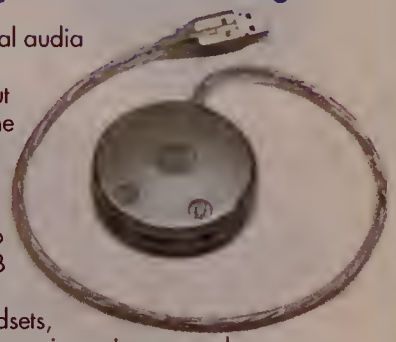

The iMic is the ideal audio interface for Macs without audio input capabilities, like the iBooks and G4 Cubes. You can use it to attach virtually any audio device to your USB equipped Mac—microphones, headsets, stereos, turntables, music equipment and more. Designed for both professionals and hobbyists, the iMic provides superior audio input/output quality.

- USB audio input and output
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- Slim and compact design
- Very reliable and quiet
- Cross platforms

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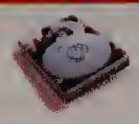

IBM IDE Ultra ATA/100

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20G	7200	2MB	DTLA-307020	$135
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45G	7200	2MB	DTLA-307045	$185
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75G	7200	2MB	DTLA-307075	$399

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10G	4400MB	1MB	1016GAP	$155
20G	4400K	1MB	2016GAP	$235

IBM Size	RPM	Cache	Model no.	Price
10G	4200MB	512K	JSA-210	$145
20G	4200K	2MB	DJSA-220000	$225
32G	5400MB	2MB	DJSA-232000	$485

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- Add two FireWire ports and two USB ports to your Mac or PC.
- OHCI compliant.
- Support seriel bus data rate up to 400 Mbits/sec.
- Supports USB 1.1

*only with purchase of any FireWire hard drive.
- Regular price $89

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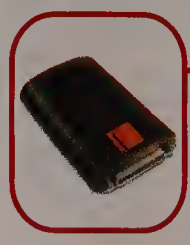

FireWire to SCSI Converter $89

The FireSCSI adapter enables existing and new high-speed SCSI peripherals to be attached to the FireWire port of a Macintosh or Windows PC. Ideal for Apple G3/G4, iMac DV, or eny FireWire equipped PC.

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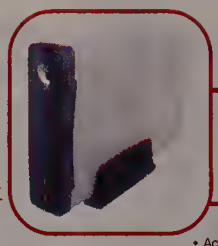
- Add SCSI peripheral support to iMac DV
- Saves your legacy SCSI perlpherals



FireWire & USB Combo, SCSI & USB Combo Cases [CG-JP3500UF] [CG-JP3500US]

FireWire & USB Combo Case

- Accomodates 3.5" IDE Drives
- No jumper pins or IDs setting
- 1 USB and 2 FireWire ports
- USB 1.1 and 1394 compatible

(Note: drives sold separately)

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- Accomodate 3.5" or 5.25" IDE/ATAPI drives such as HDD, Zip and CD-RW.
- Plug and play, hot swappable capability.
- No jumper pins or ID setting.
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- Built-in 40x40 mm fan.

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- Add two FireWire ports to your Mac or PC.
- OHCI compliant.
- Support serial bus data rate up to 400 Mbits/sec.
- Peer to peer communication structure.

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FireWire Card Bus PC Card [CG-1394CB]

- Add two FireWire ports to your Mac or PC laptop.
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- Windows 98SE, Windows 2000, MacOS 8.9 or later compatible

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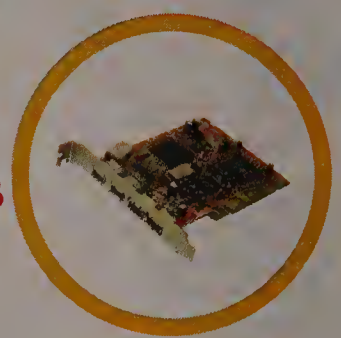

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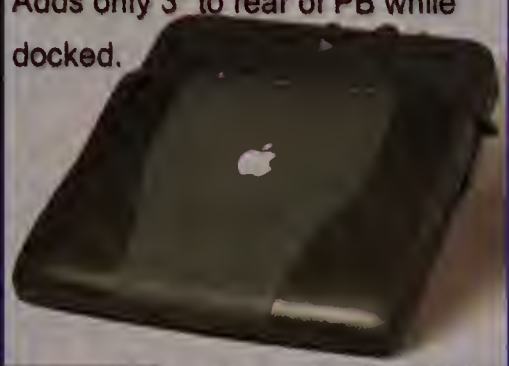

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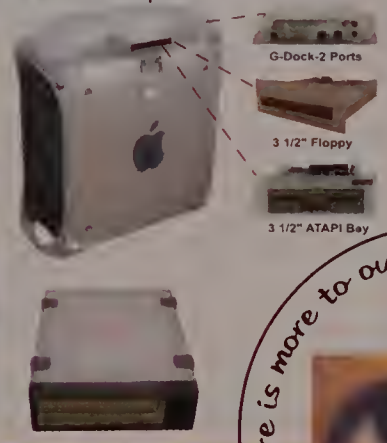

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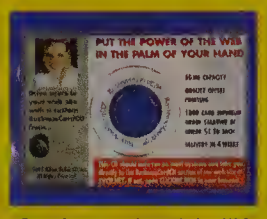

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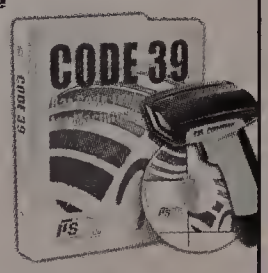

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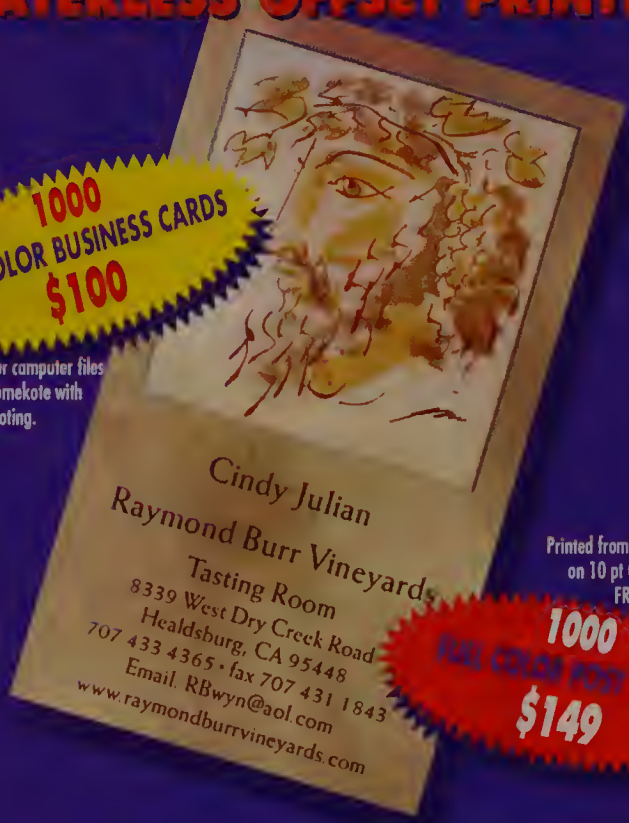

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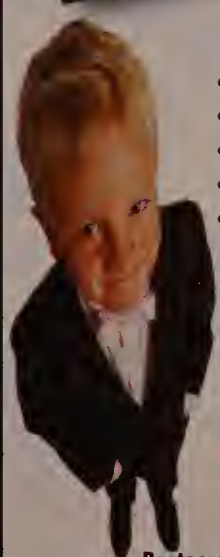

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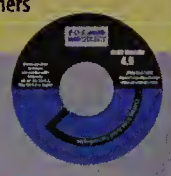

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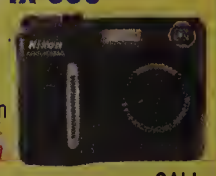

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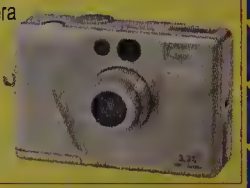

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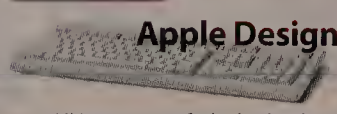

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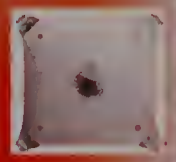

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turned it into a supercomputer that looked like a Hall's Mentho-Lyptus cough drop. I also missed the ongoing passion play of Mac OS X's alpha and beta cycles, several Macworld Expo keynotes in which iSteve drank bottled water and waved his hands a lot, the big splash that Apple made with digital video and iMovie, and Apple's increasing effort to make an impact with its software.

I lost out on iSteve's regular revelations of new iMacs that (according to the press releases) sported colors hitherto undreamed of by the puny mind of the Universe, colors forcibly inserted into the visible spectrum by Apple's sheer commitment to excellence. Would that the company only had put the same amount of effort into developing an iMac with more *vroom* under the hood. And I missed the introduction of the G4 Cube, a spectacular piece of design and engineering that, like the Newton, was too expensive and ultimately not what consumers wanted.

And it seems that I've missed iSteve's first big, giddy misstep. Just after I left, Apple shed its (entirely unwarranted) reputation as a Company On The Brink and brought out the iMac: eminently powerful, wholly affordable, and with a visual appeal like no other consumer product on the market.

As I resume this column, Apple has abandoned the more frighteningly unorthodox elements of Mac OS X in favor of a more traditional Mac experience. It's introduced a new PowerBook with style so advanced and appealing, it's the sort of thing a James Bond villain would ironically impale himself on in his lair at the end of the movie. And the PowerBook G4 has just about every feature people have been asking for, including less weight and more power at a relatively low price. And while the new desktop towers have the forward-looking and highly advanced ability to burn CDs and DVDs, consumers don't have to pay for that option if they don't want to . . . and *everyone* still gets a fourth PCI slot.

It appears that Apple has learned how to retain the excitement and vitality of its birthright and combine it with the dull but vital sense of duty that keeps a company healthy and profitable.

Damn. Well, at least I've got a three-year backlog of wiseass remarks to draw on until Apple starts screwing things up all over again. **m**

ANDY IHNATKO (www.andyi.com) has written for the *Chicago Sun-Times*, *Playboy*, and many other publications since we published his last *MacUser* column in January 1998. To interact with Andy, visit Macworld.com and type **Ihnatko Forum** in the Search box.

ANDY IHNATKO

As I Was Saying...

THREE YEARS IS AN EYE BLINK IN THE GRAND SWEEP OF APPLE HISTORY

Well, folks, it's been more than three years since I was rudely interrupted during my last opinion column in *Macworld* (incorporating *MacUser*). And wouldn't you know it: I stopped writing that column just as Steve Jobs's second coming really got rolling. You may recall that moment: some very smart initial moves had *finally* resulted in a surge in Apple's artificially low stock price, and after a few months, it was clear that the Bad Times were finally over and that we had Steve to thank.

Steve's importance to Apple and the faith everyone had put in him were infinite. But arming Steve Jobs with a sense of absolute invincibility and loosing him inside a company is like putting a toddler in a white living room with an assortment of jams, jellies, and condiments: the results are simultaneously wonderful, dramatic, and rather terrifying.

Which is not to say that Jobs's sense of invincibility was invalid. During my years at *MacUser*, I wrote about the CEOs who filled the gap between Steve and iSteve. First came John Sculley, probably the best of the Sandwich CEOs. For one, the Newton was his baby, and I can't get over how he managed to produce such a quintessentially Apple product so soon after his first exposure to the nanospores in the Apple campus's ventilation system. Newton was immensely useful, the obvious Next Thing Coming, and a perfect fusion of advanced hardware and software with an understanding of how humans interact with them. Oh, and it cost way too much and was released years before consumers were ready for it. All in all, a perfect outing.

But Sculley was followed by Michael Spindler and Dr. Gil Amelio. Spindler was too much of a company man to successfully formulate and implement the larger vision that has always driven Apple. And Amelio—who I think replaced the evil Dr. Clayton Forrester on camera after Trace Beaulieu left the cast of *Mystery Science Theater 3000*—was too much of a corporate man, period. After I read his memoir about his tenure at Apple, my respect for Amelio grew (as did my appreciation for the trouble he was in the moment he parked his Lexus in Spindler's old spot). But if Spindler failed to understand Apple as a car that required gas, oil, and regular replacement of the tree-shaped air freshener dangling off the radio knob, Amelio seemed to see it as a collection of commonly available, interchangeable parts. At times, one wondered if he thought of Apple in terms of its value as scrap metal.

If you're a regular watcher of MTV's *The Real World*, you're probably fascinated by the show for the same reason I am: week after week, I just cannot get over how a group of people with *that* much talent and potential can manage to waste so much time and opportunity. And that's one of the less positive traits of the Mac community, both institutionally and individually: we *need* a Steve Jobs to rally us occasionally and to dangle new carrots in front of us—to remind us that God has a wonderful plan for our future and that He wears jeans and a black mock-turtleneck (and sometimes parks in the handicapped spots on campus, according to rumor).

So what have I missed out on during my three years in the wilderness? Well, I didn't get to write about the excitement of the iMac and those megasuperhyperginchy designs that took the boring box of the G3 tower and

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